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**Design Studios: Understanding Relations Between Built Environment,
Learning and Behaviours**

By:

Reem Abbas Ebrahim Ali Ahmed Sultan

A thesis submitted in partial fulfilment of the requirements for the degree of
Doctor of Philosophy

The University of Sheffield
Faculty of Social Sciences
School of Architecture

May 2018

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ABSTRACT

The design studio is an important part of design and architectural education, because of the unique approach of pedagogy used (Dutton, 1987, Salama, 1995, 2012). This research uses this space to examine the physical characteristics and properties of the design studio as a space, considering the ways it influences the behaviours and emotions of its users towards learning and collaborating with one another. Starting from the Sheffield School of Architecture, where the focus towards engaged and reflective learning. Trying to answer the research question ‘How do the physical characteristics of the Design Studio influence certain behaviours of the studio user, relevant to collaborative learning?’. Ultimately, attention is directed towards looking at their experience, which is created with the influence of the space, and the curriculum of architectural education, with both referred to as the ‘design studio’ (Crowther, 2013).

This research has ‘empowered’ users of the design studio (Lerat, 2013), notably ‘students’ of four different universities in the context of the United Kingdom, through creating a hybrid research methodology that revolves around capturing their experience in relation to the physical space of the design studio. Under the umbrella of case study, using ethnography and focus groups, which were consisting of ‘Student Designer Engagement Map’, a method created based on a service design tool (Stickdorn and Schneider, 2011) to capture the current and aspired experience. These have then been analysed and interpreted through different lenses, i.e. the interior designer, tutor and the researcher.

The findings of the research were themed around spatial features in terms of social aspects, environmental control aspects and in terms of design organisation and furniture. The findings were related to the emotions experienced in the design studio through the project phases and stages. The hybrid methodology used and the methods have helped in creating a framework of propositional guidelines of design considerations, which may be beneficial for the stakeholders of the learning design studio and beyond.

KEYWORDS: Design Studio – Built Environment – Behaviours – Architectural Education – Student Designer Engagement Map – Service Design

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'Whoever has a favour done for him should repay it. If he cannot find anything he can use to repay it, he should praise the one who did it. When he praises him, he thanks him. If he is silent, he is ungrateful to him. If someone adorns himself with something he has not been given, it is as if he was wearing a false garment'. Hadith

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ABBREVIATION

<i>HEI</i>	Higher Education Institution
<i>CJM</i>	Customer Journey Map
<i>RIBA</i>	Royal Institute of British Architects
<i>CABE</i>	Commission for Architecture and the Built Environment
<i>HEFCE</i>	Higher Education Funding Council for England
<i>POE</i>	Post Occupation Evaluation
<i>IC</i>	Information Commons
<i>MAAD</i>	MA in Architectural design
<i>SSoA</i>	Sheffield School of Architecture

DEFINITION OF TERMS

<i>Design Studio</i>	The term ‘design studio’, in this context of the research, is the educational design studio, and refers to both the physical space and the mode of engagement, or the strategy used within that space, as part of the curriculum. When talking about the physical space, the design studio will be prefixed by Learning (Learning Design Studio). Otherwise, the design studio refers to the curriculum.
<i>Higher Educational Institutions</i>	Mostly abbreviated to HEI in the United Kingdom. It is the level of education which sets the context of this research. It includes mainly Universities, but also means vocational universities, colleges, institutes of technology and so on which award degrees and certificates to their students.
<i>Pictogram</i>	Pictograms mostly a designed graph that is used to annotate data instead of words, these type of graphs is used in comparison or illustrating data.

'Whatever good things we build end up building us.' – Jim Rohn

One

CHAPTER 1: INTRODUCTION

1.1 Chapter Overview

This research looks at the physical built environment of the educational learning **design studio** in higher education, and users' perceptions of such an environment, as well as the role it plays in relation to fostering creative collaborative learning processes. This chapter sheds the light on the research content about design studios and context. Section 1.2 frames an understanding of the background of conducting this research around the design studio. In 1.3, the focus centres on the questions steering this research and gives a boundary to this investigation. Section 1.4 explains the aims and how they can be achieved by illustrating the objectives. Section 1.5 elucidates the limitations of this study, with Section 1.6 then explaining the significance and contribution of this research to the body of knowledge. Following, 1.7 introduces the methodology used within this research, and Section 1.8 concludes the chapter.

1.2 Study Background

In Architectural and Design education, students' learning and teaching processes take place in many different spaces. These include ordinary classrooms and lecture theatres; however, in the main, they spend most of their learning years in design studios. As an essential space for students, the design studio serves as a functional space as much as it serves as a curriculum. The design studio is the foremost module the students of design education study (Dutton, 1987; Salama, 1995, 2012). The students work to combine the knowledge taken in the other modules and apply it within the design studio.

This research is a way of reconsidering the studio space through the tangible physical requirements of its users. It seeks to investigate the spatial experience of the users of the space as a way of rethinking some of the spatial features that makes the design studio space—just in time for the new emerging design concepts and trends, such as co-design and co-creations.

The spatial experience of the design studio has potentially not been tackled for two main reasons. First, the spatial experience as an outcome for any design was nowhere on the priorities of the designer. Most of the time, the designer will design the space according to a set of requirements, often given by a person of influence that will most probably never use the space. The architect has a detailed technical brief to which the design of a building should respond (Blyth, 2001). Secondly, the designers have not been specifically trained to address the needs of the users - especially if trained under engineering and/or other schools that falls under other faculties than social sciences, fulfilling the requirements of the space; most designers do not focus on the users but primarily on the function, and whatever problems the designers face, they seek to manage these by themselves, without referring to the client, with the notion that they are better trained to address these problems than the users of the space (Blyth, 2010).

The conventional way of looking at an architectural building is through the designer's perspective, whether fulfilled their initial concept, drawings or function of the space, thus describing spaces through a set of physical values. However, most of the designers disregard a very important element that deals with the immateriality aspect of a space. By focusing on the user's experience on the built environment, one can make sense of their world through environments that support 'complex, varied, sustained, and changing relationships between people, the world of experience, ideas and the many ways of expressing ideas.' This may lead to a full understanding of the concept of the environment being the third teacher (Cadwell, 1997: 93).

As this research challenges the old-age practices of the designers of these spaces to acknowledge user experience. Through an interdisciplinary critical approach, it will help to direct the designer's attention to this matter as part of their design outcome.

This research gathers the emerging concepts of the design profession. Its physical approach is what this study seeks to identify, measure and evaluate. It will focus on the theme of the user's experience of the design spaces, whilst also creating a framework that captures and interprets experiences to be available for the designers and consultancies dealing with the universities and school of design, whilst also potentially

investigating a structure of a manual that could be used from evidences gathered in future research.

Throughout this research, it is hoped that people's and designers' attention will be directed to the idea that, through spatial design—particularly good ones, designers can communicate good behaviours; that design is not only purposed for aesthetic reasons and the look of the space; more specifically, in the creative industries, the designer's ability to enhance people's lives through a necessity of reprioritizing human factors and users' needs in these spaces, remarkably when focusing on educational facilities.

Consequently, this research seeks to make both a theoretical and practical contribution to the body of knowledge regarding the vitality of user experience, within the typical medium of design, delivering space in such a way so as to support the new emerging concepts and trends of the design world.

Knowing that education is the best way of achieving faster growth in any community, more jobs, greater productivity and wide-shared prosperity (Schweke, 2004), this would result in greater investment in the educational sector.

Most researches discussing enhancing the student's experience within the classroom are associated with technology; however, limited technology embedded within the classroom can cause much dullness in the classroom, yet more might have the same effect on engaging students with the activities around them (Stoica et al., 2012).

There is also a non-tackled issue centred on how can we create interactive environments that serve as a three-dimensional textbook for learning (Taylor, 2009), although this interaction should not be presented only by the presence of technology, but also by the development of this physical environment, which achieves an action balance between purposeful design and flexibility (Firth, 2011).

The mapping of other interdisciplinary approaches and methods of non-physical and immaterial aspects of the studio environment will allow different ways of examining such a space and its emergence. It will focus on direction in terms of where enhancements of the actual studios might occur. Hence, enhancing the students' experience.

The successful designer will create a space that communicates a message to people to carry out a specific thing or feel a certain emotion. Through architecture and interior elements, such as lighting and acoustics, these combined can be manipulated to create an environment that can impact on the behaviour of the people using the space.

In order to create such spaces, designers must research the functions, the expectations of those who will use such a space expect, and the cultural setting around the space and people. Co-creation ensures that designers are to be able to define the requirements, being able to fully design a space that can be used to its full potential, whilst also adhering to values that can be emphasised in those spaces.

In educational settings, these spaces should encourage teamwork and collaboration amongst students, as well as teachers. They should communicate creativeness and facilitate innovation and confidence through creating a space that absorbs people, places and their perspectives. Such a space allows transition and progression for students and teachers through their occupancy of the space, with the space evolving with its users and shaping their needs and demands (Doorley & Witthoft, 2012).

If it is believed that there is no such space that is ideal, the idea of an ideal space would require that it be tailored to every student, teacher and user that could potentially use it. However, if the creation of such a space is highly unlikely, the solution is to create a customised space that is flexible enough to be transformed to accommodate every situation.

1.3 SSoA as a Context

Sheffield School of Architecture ‘SSoA’ is an influential to this research, beyond the physical design studio, the design studio ‘pedagogically’ offers opportunities for exploration and engagement locally and regionally. The SSoA values the students and often engage them in questioning architecture and architectural education, which encourages the students to be reflective, engaged and responsive towards their education, and mainly to this research, it offers the opportunity for collaboration (Care et al., 2013, 2012). Which makes the SSoA, a good starting point to initiate this research.

1.4 Research Question

The purpose of this research is to investigate the educational design studio as a physical space and the design studio as a curriculum, and to explore students' perceptions of the design studio. The main exploration is related to 'How do the physical characteristics of the Design Studio influence certain behaviours of the studio user, relevant to collaborative learning?'

1.5 Aims and Objectives

The key aim of the research is to better understand the relationship between the physical space of the educational design studio and the behaviours of students engaged in collaborative learning. The second aim is to provide an evidence base for the design, arrangement and the appropriation of such learning spaces to foster the collaborative creative processes in learning. This research seeks to investigate the specific characteristics of the physical environment of the design studio, which are seen to influence design students' interaction with the space and to record the collaborative learning processes associated with studio space.

The research question will be addressed through the following objectives:

1. To identify any physical/spatial characteristics that might define the design studio.
2. To determine the criteria for generating information on how the design studio contributes to users' experience.
3. To investigate the perceived value of the design studio to the users of such a space.
4. To identify the qualities and features of design studio spaces/areas where collaborative process takes place.
5. To describe the relationship between learning activities, pedagogy and space in the design studio.

1.6 Limitations

The limitation of the study has three factors, namely time, team and permissions. The time of the study carried out is limited to the time of the funding and the research time, which is between twelve and eighteen months of collecting data and analysing them; thus, the amount of the studio spaces is considerably low in relation to the number of studios across the UK, which is the context of this research. The timing of accessing the studios is another limitation to such an investigation. Observing a studio whilst completing a review or approaching one is very difficult.

The second limitation relates to the ability to record and investigate studio spaces with the depth required by the PhD researcher alone, which either requires further recruitment or limiting of the study to a certain number of studios. This again reflects on the duration of the research and the time limits that constrain the researcher, in addition to budgeting, recruitment and the travel expenses from and to the studios in the investigation.

The last limitation is with regards the permissions of access to premises at other universities and the procedures associated with the formalities of being granted access. The researcher attempted mapping the studios with regards their physical characteristics and the curriculum used within schools and in line with university policies, with the survey not achieving as much of a response and gathering as much information as planned, which then forced the researcher to try and access studios by the use of contacts to compensate for the time wasted.

1.7 Research Significance

This research is important as an attempt to bridge the existing empirical research carried out in the realms of school design and workplace design, where previous studies focus primarily on spaces for young people or for professionals. This study will build upon understanding and evidence in these fields to contribute to the context of Higher Education spaces designed for adult learners. This research also seeks to explore the relationship between spatial design and the behaviours of users, and will thereafter offer new empirically-based knowledge that perceivably used as reference for design of future studios and schools of design. There is currently only one known previous design case

(not a research study) examining the design studio as a context for furthering Evidence-Based Design (Leigh *et al.*, 2013) The research also seeks to garner evidence potentially to be used by designers and people with interest in shaping environments around collaboration processes in learning, and will aim to set a methodological framework allowing future research to be conducted which explores collaborative learning processes in different kinds of educational spaces, and will also seek to relate the emotions with how to perceive a space.

1.8 Methodology and Research Approach

Every research is carried out by a researcher with their own individual beliefs and values in regards how the research should be done and channelled, which is known as the research paradigms and approaches. The paradigm of the research is simply the lens through which the researcher gathers and looks at the research data (Collins, 2010). As detailed in Chapter 4, the methodology used is based on the Interpretivist paradigm, where the researcher influences the research by being ‘self-reflexive’, stamping the researcher’s identity on the research and the subjects. This research considers a certain context, which is influenced massively by its users. Acknowledging that, researching around studio space and its users is also ‘unique’ because of the recognition paid to the impact of researcher attributes and roles, as detailed in the same chapter on the interpretation of the research data (Pezalla *et al.*, 2012).

Underpinning experiences and relations yield for qualitative research, which can record insights and in-depth investigation. The research strategy has included many research aspects, looking at the creative research and the innovation methods, and through to the emotional research and visual anthropology. This variety is crucial when researching a subject, like the design studio, and the relations created by the users of the design studio as a result.

The outcome of this research is confined within the boundary of the United Kingdom, higher education institutions, and architectural and design schools. The outcomes are unique to this context. Furthermore, the researcher believes that outcome of each learning design studio in question, and its users, as well as the policies impacted on it

either by tutors or schools and so on, may not be generalised to another learning design studio. Nonetheless, certain considerations and thoughts can be taken into account from these cases, as elucidated in Chapter 9, as applicable design propositional guidelines.

1.9 Thesis Overview

This thesis consists of ten chapters. Chapter 1 provides the overview of the research and the research question, and the objectives to be accomplished within the limits of this thesis.

Chapters 2 and 3 provide an overview of the literature associated with this research; where Chapter 2 discusses the learning spaces in the **Higher Educational Institution**. It then associates these learning spaces with the pedagogy used within them. This chapter also maps the Architectural Education history, spaces of learning, and the emergence of the Design Studio as a curriculum and space. The chapter also talks about the design studio as a physical space, and discusses the debate on the importance of the design studio existence. The end of Chapter 2 introduces the relations between the environment and human behaviour, and how that is a viable research aspect.

Chapter 3 is a continuation of the last section in Chapter 2, which revolves around the built environment and the influence on the behaviour of people in such a space. It mainly discusses how the built environment can be utilised to create experiences as the resolution nowadays is towards spaces designed for experiences in the era of technology and the web, which provides almost everything without the need for people to move out of their houses. Chapter 3 continues to look at elements of the built environment, such as layout, furniture, contextual needs and building materials, tying these elements with the behaviours of the people and how these elements impact their performance in the space.

In Chapter 4, the focus is on the research and how the research is conducted, the position of the researcher, and researcher strategy, adopting a qualitative approach towards the study by generating insights and in-depth investigation, which is what this study seeks to achieve. Chapter 4 goes further in terms of illustrating the research plan, discussing the detour that resulted in a change to the initial plan, which allowed the introduction of the element of designing a public design studio in the Information Commons at the

University of Sheffield. The survey selects a design studio for the purpose of cases and the pilot study that has been conducted before proceeding with the research. The chapter then states the roles of the researcher in understanding the study and how each role contributes to the research.

Case studies were then presented as standalone chapters, where Chapter 5 represents the case study of Northumbria University, looking at the university profile, and then stating the findings of the study categorised in themes generated by the researcher out of an initial analysis of the findings. At the end, there is a reflection on the methods used in the case study and how it will be further developed in the next case study. Chapter 6, which is the case study of The University of Newcastle, again adopts the same format. Chapter 7, which considers the University of Plymouth, ends with an in-depth investigation of the University of Sheffield, as shown in Chapter 8.

Chapter 9 presents the analysis, starting with a design of the analysis approach to suit the data and the visual methods used to generate these data. It then starts by outlining the analysis of these data, as presented by three major themes, the social aspects, the environmental control, and the last themes related to spatial organisation and furniture. At the end of the chapter, there is an analysis concerning the design studio curriculum, which comprises the project stages and phases, and relates them with emotions. The second part of this chapter starts with another part of the literature review—in regards the theories of spatial perception—is carried out, starting with Lefebvre and Lynch, but looking more in-depth in regards the practical guidance of ideas, as provided by Burnswick, Gibson & Berlyne.

Furthermore, in Chapter 9, the focus is on the proposed framework of how the design studio is experienced by the researcher, whilst the end section considers the same case studies and compares two experiences: the one the researcher has generated and the one reported by the Royal Institute of British Architects (RIBA). Then the chapter provides insight into the practical application of the thesis, and the concluding propositional guidelines for designing design studio, as provided by the researcher as a result of the proposed framework.

Finally, Chapter 10 marks the recommendations and conclusions of the work, with its potential contribution and future research possibilities.

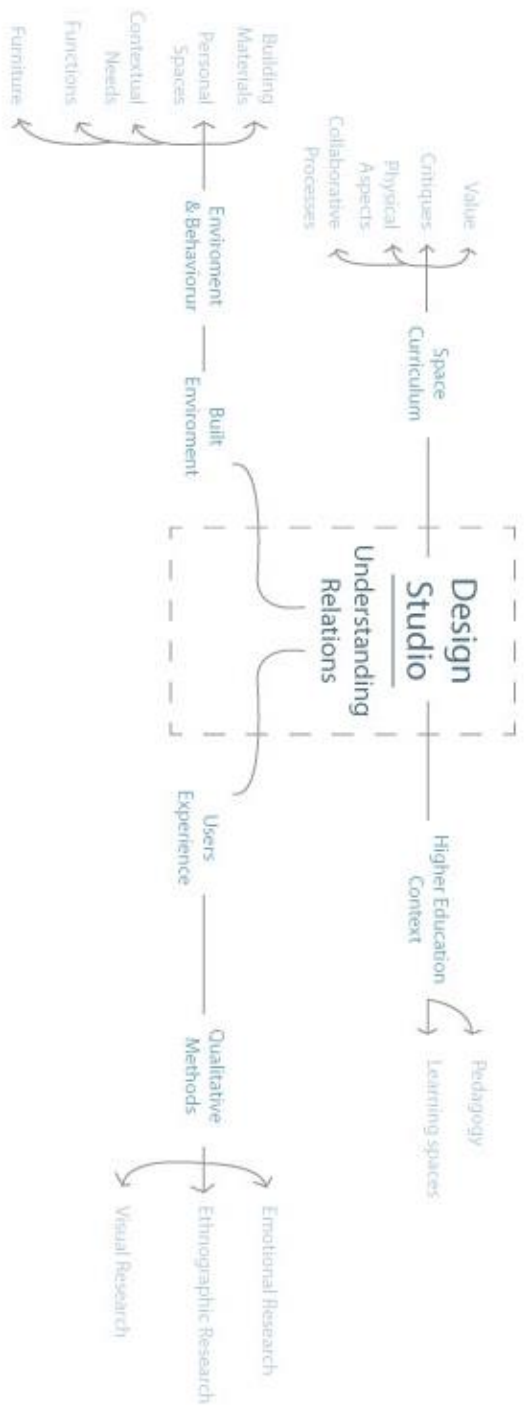


Figure 1 - 1 The Scope of the research. Source: Author

1.10 Notes on Reading this Thesis

This thesis has been structured as above to provide the reader with a logical sequence of the research. Every chapter starts with an overview of what the chapter will contain, as well as a conclusion and introduction to the next chapter.

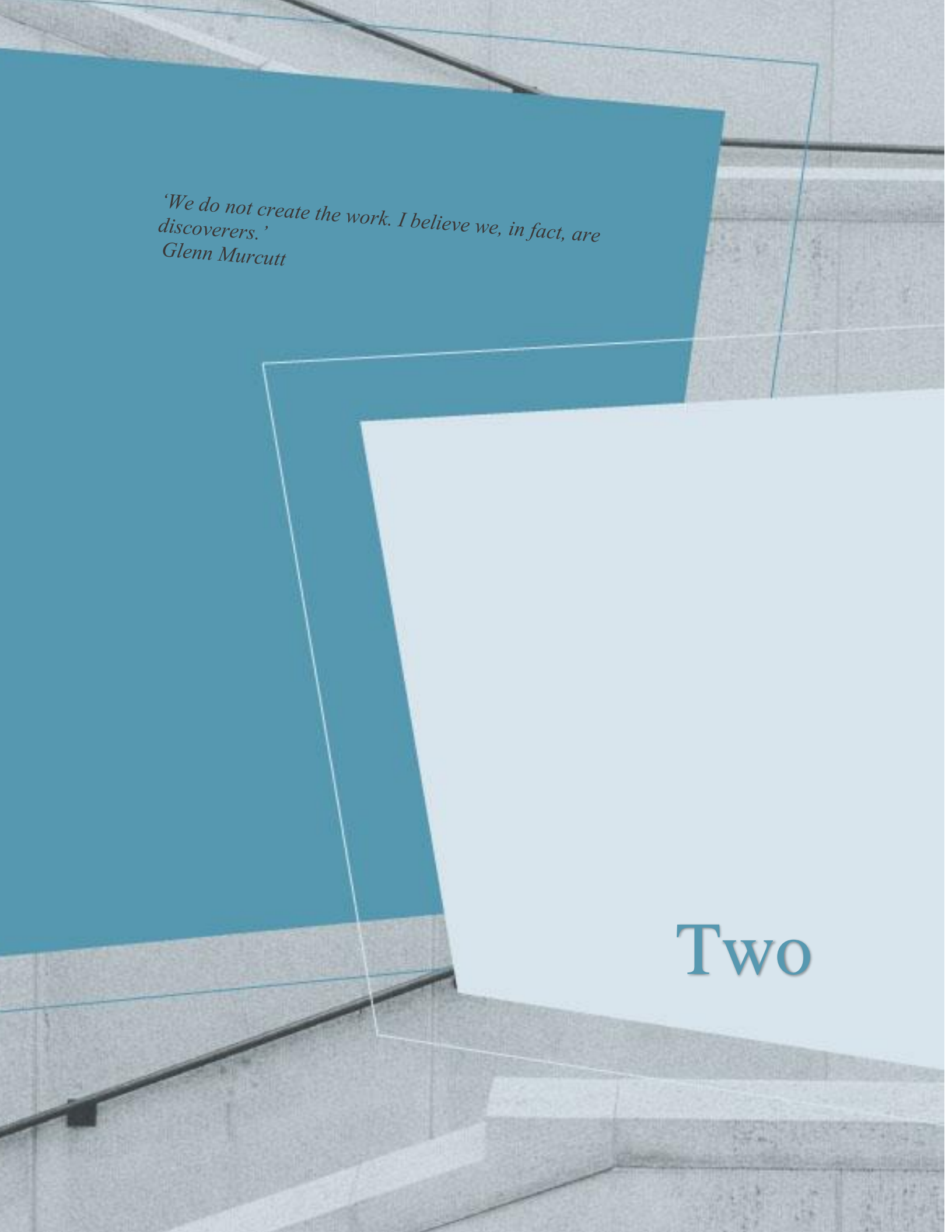
Some of the terms used in this thesis have been defined and explained by the researcher at the beginning of this paper. These terms are highlighted in **bold**.

It is also to be noted that, in chapters 5–8, where the case studies are listed, each case study is presented in a standalone format, considering the findings of each case. At the end of each case study.

Following Chapter 5, 6, 7, 8, and 9 there will be visual summary in a journal form to summarize the findings and the key issues that have been found or discussed.

Some of the pictures used are accompanied with Pictograms, as it is part of the analysis process. The definition of a pictogram, as detailed in Cambridge Dictionary, is ‘a type of graph that uses pictures or symbols to show or compare data’ (‘pictogram Meaning in the Cambridge English Dictionary,’ n.d.).

The use of symbols serves two purposes in this research: one is centred on the fast-reading of the pictures; the second is another form of thematic analysis. At the end of each case study, there will be a set of pictures and drawings related to the case study. Such data will be analysed using the themes and pictograms representing these themes, which will be attached to the picture or drawing. These pictograms present an extension to the themes identified in each case study, which are then built accumulatively whilst revisiting the previous case studies to determine whether or not any of these themes has been overlooked. The legend of these pictograms is presented in Appendix 1. Where the pictures and the students’ drawings are attached in Appendix 5 with the pictograms used for the purpose of fast analysis and indexing.



*'We do not create the work. I believe we, in fact, are
discoverers.'*
Glenn Murcutt

Two

CHAPTER 2: DESIGN STUDIO LITERATURE REVIEW

2.1 Chapter Overview

This research looks specifically at the Design Studio in the learning context as a curriculum and as a space, with the design studio chosen as the researcher has a personal and professional interest in this terrain. This chapter provides a chronological sequence of the development of higher education spaces of learning and teaching, between classrooms, lecture theatres and studios, tying these spaces with learning and teaching approaches that have been used or that have recently emerged in Higher Education.

After a thorough overview on the design studio in history, with attempts directed towards defining the design studio, in one particular point there is a debate on critiques of that design studio. The discussion then looks at differences between design studios, on campus, virtual and rural, seeking to narrow down what makes a design studio space from the literature, the curriculum used and the physical aspects. The need to deliberate on one of the major associated behaviours with the design studio—that of collaboration.

The argument that the built environment has a relation with human behaviour is one of the foremost thoughts in this research, with attention directed towards how space effects its users, and the studies and publications that look into this matter. In this section of the chapter, an introduction to environment and behaviour is presented.

The chapter then concludes to summarise the main findings in the literature around design studios in Higher Education Institutions and paves the way to more around Environment and Behaviour in Chapter 3.

2.2 The Design Studio

2.2.1 Higher Education Institution Context

In order to define and understand the educational design studio, it is important to also gain an understanding into the spaces of learning and teaching in Higher Education Institution (HEIs), as the context in which the design studios are situated.

In the theories and practices concerning physical learning spaces in the post-compulsory education and HEIs, it is first important to attempt to define the spaces of learning and then place this within the HEI context.

The terminology of ‘learning space’ has come to replace the old term ‘classroom space’ where most formal programmed teaching and learning processes once took place. This change started to take place from the start of the last decade, and especially after the emergence of the World Wide Web (Brown, 2005) Internet and globalisation—or what is called the ‘information age’ (Donaldson, 2012: 13)—is recognised by Donaldson, with the scholar stating that information is provided by many sources, although not knowledge, and that the role of the teacher currently is to facilitate the process of acquiring ‘information’ and transforming it into ‘knowledge’ (Donaldson, 2012: 13).

Clearly, the information age is considered to have had a real impact on the design of spaces in general. Previously, institutions were designed to accommodate a common type of teaching, represented by the position of the teacher at the head of the room, allowing the teacher dominance over the students (Doorley & Witthoft, 2012). As a result, this type of teaching distinguishes the teacher as being the ‘owner of the knowledge’, and thus there was a perceived understanding that the transformation of knowledge and the State authority were to be received with the presence of will by the student. This impacted on the learning spaces’ design to reflect and to manage such a projection of knowledge (Bennett, 2007).

As can be expected, in the information-age period, the use of the classroom has shifted to becoming a social means and the learning spaces that are now categorized to be formal—such as the classrooms and the laboratories—have included more spaces on the campus for other than their main functions, such as not only a library, but also a common room or a faculty office; they have adopted a new role in being other spaces of learning. Furthermore, experts are now arguing that places such as cafes and even the airport lounges can be considered as learning spaces by connecting to a virtual environment, so that it is not solely limited to the university campus (Keppell *et al.*, 2012).

Some universities associated their missions and visions to the physical campus, like the College of William and Mary in 2003: ‘The College recognises the importance of re-establishing the consistency of planning and design principles exemplified in the Old Campus. The College, therefore, has formulated the following design guidelines to serve as a framework for planning and design decisions relative to future campus facility development initiatives’. (‘Campus Master Plan | William & Mary,’ n.d.)

2.2.2 Overview of HEIs Pedagogy in Relation to Learning Spaces

Consigning authority and embracing collaboration is one side of the formula in contemporary learning spaces. The teaching methods and initiatives, along with enclosing the technology within the learning spaces of the HEI, impacted the process of learning, but these were not the only factors; the transformation of pedagogies, ‘learning trends’ adopted by the institutions, is also known to shape much of the learning space within institutions (Marmot, 2006). A study exploring the relationship between space and HEI pedagogies was carried out for the Scottish Funding Council in 2006, through the means of questionnaires and a thorough literature review aiming to engage the estate managers within the HEIs in discussions with the teaching staff within the same institutions. According to this study, the best forms of campus buildings worked with the latest learning and teaching trends (2006:1), which, it concluded, fell into one of three categories (Jamieson, 2007; Marmot, 2006):

1. Learning by doing (Long & Ehrmann, 2005)
2. Learning through conversation
3. Learning by reflection.

These identified ‘trends’ reflect a move in HEIs towards a ‘student-centred pedagogy’, which can stimulate active and collaborative learning (Jamieson, 2007:19). Jamieson also argues that the university campus must accommodate a ‘greater mix of teaching and learning approaches’ (Jamieson, 2007:19).

As a result of Jamieson’s illustrated conclusion (2007), the spaces of learning, due to these learning trends, change physically in effect. Boys (2010) came to three reflections regarding learning spaces and the users of these spaces, based on a review done for the

HEIs' learning spaces, in her book *Towards Creative Learning Spaces: Re-thinking the Architecture of Post-compulsory Education* (2010). The first reflection on a comparison made by Boys (2010) around formal and informal learning is that space, when 'recognisable' to the learners, will let them be very familiar with it. In this case they thus will know exactly what is expected from them within its boundaries. Boys gives an example of that, sometimes, in a known place like a lecture theatre, the users know what are their positions within it, and will feel 'safe' within it. A student will assume that the position he/she will take in lecture theatre is passive. The notions of how the space is sending a message 'intersecting' with the concepts of teaching (Boys, 2010:48). The second reflection considered by Boys is that the space can be altered to reflect the changes happening regarding the teaching models and the students' numbers; the assessment procedure and a bigger scale and context. Boys highlights:

'... the call here is for more iterative, time--rich learning and research environment' (2010: 48).

The final reflection is on the architecture space supporting the learning process. Boys (2010) argues that the concepts driven from the theories reviewed by her should not be blended directly into an architectural form, but must be eclectic and selective towards which of them would be beneficial and would shape the learning environment, resulting in an approach of asking the right questions. Boys (2010), Bennett (2007), and Singleton (2014) here address the same issue:

'The role of the designers is to create agitated spaces, providing environments that are not pedagogically fixed, but which are mixed in across a multi--directional learning environment.' (Singleton, 2014)

The categorisation of the Formal and Informal has been always debated within recent research; the shift from formal to informal sitting reflects changing theories and pedagogy as well. Quoting from a report for the Scottish Funding Council:

'Formal teaching spaces for large groups with a 'sage on a stage' are becoming less common than smaller, less formal settings where students learn from one another as well as from their appointed teachers.' (2006: 1)

Here, the educators tend to encircle the newest theories highlighted in the Scottish Funding Council Report, which move away from the traditional ‘Chalk and talk’ ways of teaching (Boys, 2010: 3). Strikingly here, Boys has contested ‘the myth’ of the preference right now being shifted towards informal learning. The paper, ‘Beyond the beanbag’ by Boys (2009) argues that the new informal design environment ‘for example, through learning cafés, corridor ‘nooks’ and library learning zones; and on using bright colours, natural lighting, playful graphics and soft furnishings.’ (Boys, 2009:1), although contributing to the learning spaces, are more likely based on a ‘simplified notions’ kind of approach to solving the design of learning spaces.

2.2.3 Physical vs Virtual Campus

The latest trends and learning styles, as discussed previously, have been emerging and shaping the new HEIs methods of delivering their services (The idea of Higher Educational Institution being a service provider and the students as a consumer or customers has been broadly discussed in Chapter 4, when talking about the design methods)¹. The role of the physical campus has been in question too. There are many reasons why the physical presence of the HEI is so important. One might argue that with all the virtual learning such as E-Learning and M-Learning (Mobile Learning), although it is not limited to it, the value of brick and mortar would be dismissed. Nevertheless, other researchers contest the idea that the students tend to use other places for their learning:

‘Given the investment colleges and universities make in bricks and mortar buildings -and indeed in whole campuses- to provide strong environments for learning, it is deeply troubling to know that nearly 90 per cent of full-time students fail to spend the time on task that faculty believe is needed for academic success.’ (Bennett, 2007:16).

¹ As the researcher knows that this is unacceptable term by many academics to describe the teaching process by ‘service’. It is coming from the researcher background as a service designer, dealing with this research as familiar process. It is in fact describing the HEIs as a service provider, as they have been described by the United Kingdom Government.

Although the presence of virtual learning spaces could save HEIs lots of money in regards building the signature ‘icon’, it is the building that would arguably become the ‘brand’ to some of the institutions.

Studies have assured that ‘universities must continue to recognise the key role which the physical campus will continue to play in attracting new students’ (Singleton, 2014: website). Learning from the Australian and American Universities, it appears that the most prestigious academics are attracted to the universities, which have better learning and teaching facilities:

‘The value to the institution of well--designed buildings has been recently explored by CABE and HEFCE. Their study concluded that staff appreciated well-designed facilities more than students’ (Marmot, 2006:16).

American universities seek an ‘international known signature architects’ (Nasar et al., 2007:2) to design their architecture school buildings:

‘Just as universities try to build and equip world--class science labs to attract top scientists, new buildings for schools of architecture presumably reflect the state-of-the-art in architectural education’. (Nasar et al, 2007:2)

On another level, virtual learning does have some benefits, allowing students dispersed internationally or even within the nation to participate in learning and easily obtain a degree, for example, without their continuous physical presence. Hence, the notion of blended learning has come to be understood as something that may embrace the complementary aspects of the physical and the virtual learning space. In many ways, blended learning has its impacts on the presence of the physical campus. With blended learning, it is common to find many forms of learning spaces other than classrooms: ‘[The] informal learning space design is rapidly becoming a primary focus of interest and innovation’ (Milne, 2006:4) as a result of the spread of wireless, and students’ ownership of laptops increasing, but most importantly the fact that majority of activities do not take places in classrooms (Milne, 2006).

Singleton (2014) claims that, in future, there will be a major change to the campus and physical presence of HEIs’ buildings, and right now the terms ‘flipped campus’ and

‘flipped classroom’ have appeared in the notion of the blended learning. The idea is that the lecturing would take place outside the premises of the classroom or the campus (e.g., online), and then the study would take place within the campus. This again has a potentially significant impact on the required physical learning spaces, as the number of large group spaces can decrease, as small groups and information commons then have a higher value for the HEIs. Most studying within the flipped classroom would be taken through the Mobile learning devices, such as computers, tablets, and mobiles, which can actually be carried anywhere. The importance of the campus would then become to emphasise the interaction and the social side of the learning, thus supporting both incidental and planned collaboration.

It could be argued that ‘radical’ changes to the existing learning environment should be executed ‘intelligently’ to renovate them (Marmot, 2006). Clark Kerr (2001) elucidates how most universities built before 1520 still exist in their old form. Moreover:

*‘Architecture is no longer merely a container within which learning happens... buildings themselves can provide several dimensions of support for learning’
(Long & Ehrmann, 2005:46).*

However, it has been contested that the need for change remains within the framework of the preservation of the old envelope, as it is obvious that ‘an apparently unchanging exterior masks constant interior turmoil’ (SMG, 2006: 7). As the physical space is changing, it is persistently seeking to overall with the theories and the practices that the HEI chose to follow and adopt. These theories and practices are emphasising the importance role of how the buildings interact with their users. It is arguably that when the building is built with users and functions in mind, the building will perform as a framework for its users. Thus, it implies the need for new buildings or more refurbished ones to meet the goals of the HEIs and hence to create the best experience for the users of these learning spaces, which will consequently impact the learning process.

Reflecting on the importance of the physical spatial presence to the HEI, many forms of clusters of buildings have been developed, such as the ‘Science parks’ phenomenon even within the universities of social sciences fields (SMG, 2006). Another form of acknowledgement towards physical presence is the satellite branches that have started

to spread all over the world (e.g., Manchester Business school in Brazil and China, The Royal College of Surgeons (Ireland) in Bahrain, University College of London in Qatar, and Heriot-Watt University in Dubai, UAE). This might imply that the distance learning approach apparently has not been enough, and by this it is credited to the physical presence of the HEI, which hugely contributes to the teaching and learning processes.

2.2.4 Issues Concerning Design of Learning Spaces

Many scholars claim that they have covered the basics of the design elements and principles needed to establish the ideal learning space, although some have clearly stated questions that should be asked before renovating or building those learning spaces (Bennett, 2007). Several themes have been raised in the Bennett literature review (2007), just like spaces that would allow students to use them in different ranges of the spectrum, either as collaborative spaces or in isolated study. Contradicting another study elucidates Bennett, in which students requested a sense of quietness. In that case the students emphasised on one end of the spectrum where solo activities and studies are taking place within the space (Bennett, 2007). Within the same study, the author illuminates a very important part of the university campus:

Largely excluded from consideration ... are discipline-specific spaces, even those consciously designed to foster active, independent learning. ... Although they have much to teach us about designing for collaborative learning (Bennett, 2007: 14).

However, at the beginning of the 2006 paper by Bennett, he contests the link between space and behaviour when stating, ‘...we are sceptical of claims that architectural design can directly affect specific learning behaviours’ (2006: 15). His reflection is coming from the fact that the HEIs may have a ‘little experience in posing design questions about the learning behaviours it may want to encourage’ (Bennett, 2007: 15). Thus, a little is done concerning the learning environment and behaviours.

While studies such as Bennett (2007)’s have started to investigate the terrain of the

learning environment, the solution given centres on how the learning space can be enriched with Information and Communication Technology. While not undermining the fact these technologies are really supportive to learning process, the questions to ask are: What are the consequences of the space in relation to the experience of the users? How do technology and space intersect to support collaborative learning?

As seen in the context of HEIs, many factors play a role in forming HEIs, as recognised now. Changes in the learning approach of instructors and their pedagogy, students and their demands and expectations, and upper managements' perspectives on how to be distinct from other competitors, is now important when it comes to finding out where the design studio, as an educational facility, may embark on such a framework.

Many of these identified trends in HEIs are long-established notions that are practiced within the learning design studio. Those notions are found within the pedagogy associated with the design studio in the next section. As Bennett elucidates in his paper, Design studio as a discipline--specific form of space, it has many things to teach the HEIs around fostering active, independent learning, as well as collaborative learning (Bennett, 2007: 14).

2.2.5 The Historical Background of the Design Studio

The teaching of design-based disciplines varies amongst those institutions providing such programmes and modules. However, they all agree to a certain measure on a particular platform on which teaching and learning happens, which is the 'Design Studio'.

Historically, the design studio was developed from the model of apprenticeship. It was firstly known to be used in formal education at the École des Beaux-Arts in Paris during the 19th Century (Crowther, 2013; Taneri, 2013). This model of the design studio is based on transferring the knowledge—or, mastering the craft and subsequently working on how to transfer the process and experience to apprentices.

The Beaux-Arts model was based on 'design problem'. The problem is given to the students at the start of the term. Students then develop their design sketches and ideas

on the close proximity of the design master or ‘Patron’ (Bennett & Broadfoot, 2003), in a one-to-one tutorial, or are grouped together, and then it is ended to be judged by the instructor for the critiques or the final jury (Lackney, 1999).

‘The Beaux Arts teaching systems relied heavily on brilliant teachers and learning-by-doing. Competition was intense and the end results were beautifully drawn projects in traditional styles which were often defensible only on grounds of ‘good taste’ and intuition. The style was mostly neoclassical and the favourite building type was the monument. Projects were judged by a jury of professors and guest architects, usually without the students present. The jurors used the same criteria by which the students designed—“good taste”.’ (Lackney, 1999: 2).

The current design studio evolved from the design studio or the ‘atelier’ that used to be in the Beaux-Arts, and from the methodology of the Bauhaus in Germany around the 1919 to 1932. Although it did not last long as a school, the fourteen year in existence contributed to the design education till date (Cross, 1983). The methodology, in brief, is about attempting to associate art and craft. It leads to graduates that possess technical expertise as well as mastering the theories and creativeness of the design studio (Bennett & Broadfoot, 2003). The Bauhaus as a pedagogy and a model tried to recap the students from the elementary and secondary art education by introducing the Basic course, by the Bauhaus master Johannes Itten (Cross, 1983).

The design studio, as known now, shares many similarities to the models of Beaux-Arts and Bauhaus. The brief of the design and the tutorials, whether individual or groups, and the reviews, formerly crit or ‘jury’, however, are completed openly and contain some criteria for grading, not just for ‘good taste’. The competitive environment that once governed the atelier has dissolved, and collaborative aspects have been nourished within the design studio.

In the United Kingdom, the context of this research, the design education historical evolution which started in the thirteenth century. The model of learning at the beginning of the design education in the United Kingdom was based on one to one model, which is the master-apprentice (Souleles, 2013). This model depended on the

‘strict’ hierarchy and long training and practicing times until the apprentices became masters themselves.

The first school in England to accommodate the design education and proper entrance tests and ‘supervised practice- based routines’ was the Royal Academy of the Arts that was founded in 1768 (MacDonald, 2004). The model of learning around that period was focused on practicing and the tutoring provided by visitors professors to lecture in many aspects related to the art education such as architecture, anatomy and so on. This model was criticised for not providing a ‘coherent teaching programme and exposed learners to conflicting advice’ (Ashwin, 1975 found in Souleles, 2013:245).

1835 marked a milestone in the history of the design education in the United Kingdom, as it started to become acknowledged publicly due to the increase ‘awareness towards a commonly appreciated visual language for the values of antiquity. This was encouraged through access to museums and exhibitions and through the introduction of young men to the principles of correct drawing’ (Souleles, 2013, p. 245).

Within the beginning of twentieth century, guidelines were established to distinct the learning approach for teaching drawings. This put the guidelines that distinguish the teaching for manufacturing and the teaching of drawing for the purpose of ‘encouraging creativity’ in the lower discipline (Thistlewood 2005, found in Souleles, 2013:246).

Through the Coldstream report, in 1960, the art education entered the academia and introduced the Diploma in Art and Design. Up until 1986,

‘The teaching of Art and Design in higher education has come a great distance since Cal Swann’s seminal paper Sitting with Nellie was first published in 1988 when one-to-one teaching was the ubiquitous approach to the teaching of practice. Influenced by developments across the higher education sector, the past decade has witnessed major changes in teaching Art and Design, with the articulation of learning outcomes, the development of transparent assessment criteria, and the promotion of reflective learning, not to mention staff-student ratios (SSR’s) which have grown from 5:1 to an average of around 25:1. The benchmark statement is evidence of how far the Art and Design sector

has progressed, and describes the rich and diverse learning environment which students now experience' (Buss, 2002:178).

Currently, the United Kingdom Higher Education is undergoing through new confronts. The number of students that is increasing every year, limited resources which effect the staff and the students contact timings and expectations. Moreover, the Architectural Education in the United Kingdom is 'faced with an increasingly bureaucratic professional double-validation system', which is referring to ARB and RIBA. This is causing extra pressure on the schools to work on evidencing their output, and justifying their input (Morrow, 2007).

The effect of this position as Ruth Morrow (2007) states, have a direct impact on the 'potential for experimentation, critical enquiry, risk-taking' which in her opinion kills the creativity in the Architectural Education. The 'catastrophic impact' will attack the quality and how the students can experience the spaces of learning Architecture, which is mainly the Design Studio.

2.2.6 The Value of the Design Studio

The perceived importance of the design studio has been clearly reflected in the value of the contact hours allocated to the subject within design or architectural education. It was held by Dutton (1987, 1991) that the commitment of teaching staff and students of the design disciplines to the design studio has given it importance. Salama (1995), like Dutton, justifies the importance of the design studio to the time devoted to the teaching and the value of the credits associated with the design studio. It is also form a minimum of 50% in RIBA accredited courses in the UK in the RIBA validation procedure.

The students and instructors of design and architectural education have substantiated such an importance by prioritising the design studio and 'the tendency to place other coursework at the curriculum's margin' (Dutton, 1987: 16). Besides, Dutton relates the importance of the design studio to its capacity to integrate the skills, values, and literacy of other courses, making it the 'heart and head of the architectural education' (1987: 16). Crowther (2013:19), cites Stevens (1998) which states that the design studio is 'the place where knowledge and skills from the areas are integrated and

applied’.

2.2.7 What is the Design Studio Curriculum?

The term ‘studio’, in this context, refers to both the physical space and the ‘mode of engagement’, or the ‘strategy used within that space’ (Crowther, 2013: 18). While other professions utilise the same term to describe their workplace, it is also used for other learning spaces besides the architecture, albeit with different pedagogical and physical settings. The processes and activities that shape the studio space always relate to the creativity and exploration. Ledewitz (1985) defines the studio as a ‘teaching vehicle’ for creative problem--solving projects. Moreover, Salama (1995) determines those activities based on mental activities, as searching for the answers, thinking on how to apply these answers within the context of architectural projects.

According to many in the field (Crowther, 2013; Salama, 1995; Ledewitz, 1985), the design studio is a platform on which students may learn certain skills. Visualisation and representation are good illustrations of the skills taught in the design studio (Ledewitz, 1985). Salama states that the design studio ‘moulds’ students, shaping them to be the designers they are going to be, and preparing their skills to be ‘prized by the profession’ (Salama, 1995: 1). Such skills can be signified as ‘new language’, when Ledewitz referred to Schön’s wording of the skills learned in the design studio as a ‘graphic and verbal language game’ (Ledewitz, 1985:2).

The pedagogy of the design studio is arguably the defining feature of design education. The nature of the design process is related to flexible pedagogy, which is taught to students in the design studio. Therefore, there is ‘no single correct answer’ (Crowther, 2013). While Crowther also acknowledges design pedagogy as activities taking a linear direction with repeatable loops, he further elaborates on the fact that there is no predetermined outcome of the design, and that the studio model is full of ‘uncertainty, serendipity and happenstance’ (2013:19).

According to Crowther (2013), the pedagogy of design can adopt three learning types. In order to become a designer, one must learn ‘about’ the design, learning the theories

and the concepts that have been used, both before and currently. The second learning style is adopted by Schön (1983), which is centred on learning ‘how’ or ‘to’ design; this is the space where the acquired skills are developed and applied, and is the process in which the ‘coaching’ and ‘learning by doing’ complement one another and provide the student with the opportunity to design (Taneri, 2013).

The last learning style is to learn to ‘become’ a designer (Dutton, 1987). Dutton explores within his project how the pedagogy of design impacts how students come to understand themselves and their position in the ‘perception’ of the world (1987), with Crowther explaining this as being ‘the transformative pedagogy in which learning is identified as changing a person’ (2013:20).

‘...The request for “relevant” forms of new knowledge is therefore distracting, because what is new now is going to be out of date, irrelevant even, by the time our students face the world. Societal, and thus spatial, constructs are emerging with such rapidity that we are no longer educate for a fixity; instead we must educate for moving targets’.(Till, 2003:171)

The architectural education is not fixed and always changing and evolving, the change is coming from the certainty that nothing is certain in the architectural education (Royal Institute of British Architects, 1952, Benedict Brown and Holder, 2013). To accommodate for this notion of uncertainty, there are many approaches in design studio as a pedagogy, where the focus is on live learning, engaged learning and teaching, students led, critical pedagogy and reflective pedagogy.

Nowadays, and especially within the design studios at the University of Sheffield, the design studio as a pedagogy and a curriculum is encouraging the students to engage in active and reflective approach towards learning. This approach is based on modules that are critical in its nature for the precedents and the approaches, such as reflection on Architectural design and reflection on architectural education, that are offered as part of the masters’ degree modules at the university.

The Live learning approach depends on engaging the students with the community, working with the public sector:

'Live Projects develop the collaborative and participatory skills that are essential to future practice. Live Projects establish an awareness of the social responsibility of the architect and can empower students to produce work of exceptional quality that makes a difference to the communities they work with. Beyond the direct impact of the project on the communities involved, Live Projects also make a wider impact by enriching the student learning experience, developing design, management and enterprise skills and significantly increasing employability'. (Butterworth et al., 2013:2)

Live project as a term is becoming more reoccurring in the schools of architecture around the UK (Butterworth et al., 2013). The recognition of the benefits of 'soft skills' beyond academia, such as dealing with clients. The benefits also includes also as stated in the book by Butterworth, SSoA: A handbook of Live Projects, it includes the project management, participatory practice, collaborative working and reflective practice among many stated.

Engaged learning 'within the University of Sheffield', is defined as 'combining academic rigour and disciplinary knowledge with opportunities for students to learn with and from external partners, 'real-world' challenges, and experiences outside the University'(Stone and Woof, 2015). Not to far from Live projects, and engaged learning includes within its definition the concept of Live projects.

The design studio within the University of Sheffield offers a 'rich working environment' where the activities are designed broadly, and the spaces themselves are used by all years and courses (Care et al., 2013).

2.2.8 Critiques on the Design Studio and Responses

Before proceeding, it is important to establish the disadvantages of the studio model. The activities making the pedagogy of design are centred on one-to-one tutorials, which, in the first place, attempts to 'replicate' the relationship between the designer and his/her client in some of the design disciplines. This relationship between the

instructor and the students carries a social dimension, which leads to the ‘hidden curriculum’, as discussed by Dutton (1987). Hidden curriculum is simply the unintended lessons conveyed within classroom. Hidden curriculum is a design studio context:

‘the design studio, as a producer of knowledge and a social practice, can now be shown in its intimate connections to wider production, distribution, and legitimation practices of society, manipulate by governing social, economic, and political institutions’ (Dutton, 1987:19).

The other disadvantage of design pedagogy lies in the final crit, or ‘The Crit’, as the formal assessment type of the design studio, (Crowther, 2013). According to Groat & Ahrentzen (1996) and Mewburn (2011), as cited in Crowther (2013):

‘This outdated learning environment, and its hidden curriculum, favours coercion over dialogue, seeks to maintain the status quo, and fails to address the possibilities of more diverse future that will incorporate a greater diversity of technological enhancements’ (p. 20).

In another perception of the design studio pedagogy, Connor (Carmichael, n.d.) claims that what a design studio is all about lies in the process; his argument being based on ‘three basic steps’. These steps begin with sketching, presenting, and critiquing. This may have some foundation, but it is a very limited notion of the design studio. It is also understood from his argument that the design studio has no fixed space.

There are some other scholars who consider that the design studio, as a pedagogy, should be altered or replaced by a different approach. Alexander Wright of the University of Bath, for example, introduced the Critical Method based on the work of Popper (1959, 1963)—not far from the design studio as known. The introduction of criticism within the design work, is as he stated ‘straightforward’ (Wright, 2011:110). The aim of this method is to teach the student to work towards independence, where such independence is achieved as they are progressing forward in their years of study, while the students accumulate knowledge and skills of architectural problems (Wright, 2011). This can be achieved by segmenting the design studio into three aspects. What is known in Popperian language as a ‘problem’ becomes the ‘project definition’, the

‘tentative theories’ become the ‘trial solutions’, and ‘error elimination’ becomes ‘design development’. As Alexander Wright argues, the CM, or the Critical Method, has achieved ‘considerable improvement’ in ‘output standards and students satisfaction’ (Wright, 2011:121).

Another pedagogy was suggested for use in the place of the design studio, which is the Case Method, replicating what happens in the law schools. The Case Method is another process that differs from the normative design studio process. In the case methodology, the instructors who are well trained use ‘open--ended narratives’ and ‘stimulate’ alternative conclusions. The use of the Case Method fosters interpretations, questions and alternatives. The physical environment on where the teaching and learning takes place implies the use of ‘highly disciplined and rigorous classroom exercise’ (Nasar et al., 2007:24).

Alternatively, an initiative such as Live projects, which are very common in both the UK and USA, as well as internationally, especially in the field of Architectural Education, allows students to ‘work with real clients on real projects, but within an academic context’ (Butterworth, n.d.). As reflected in a number of architecture education conferences (Architecture 'Live Projects' Pedagogy International Symposium, AAE conference). A well-known example of design-build-live learning studio in USA—‘Rural Studio’—was introduced in around 1992 by Mockbee & Ruth, whose aim was concerned with ‘enabling each student to step across the threshold of misconceived opinions and to design/build with a ‘moral sense’ of service to a community’ (Feuerborn, 2005). Although this type of learning is usually only found during a limited period of an architecture student’s education, design--build approaches replace the design studio for this period, in an effort for students to immerse themselves within a community, and learn the skills of the construction technologies, as well as to understand clients and sometimes also users. This approach to design studio supports the ‘learning by doing’ learning style, although it is seen to be more in line with Dutton’s definition of ‘becoming an architect’ in acquisition of the knowledge that fits the definition of an architect.

Hunter (2012), an architecture critic, provides an ‘alternative route to architecture’,

although it is meant for postgraduates on their Master's degree. This way of delivering architectural education is through allowing students to embrace the community for which they are designing. The school is to change location each and every year, thus perceivably helping as many communities as they can, whilst at the first of each year transforming a building of the community, such as a library or any similar available building into their temporary campus or 'studio', relying on the facilities given to them by the community.

'Pedagogically, a guiding principle would be that the latter part of your architectural education should be a type of supported 'proto--practice', and that the educational structures should reflect these new ways of working' (Hunter, 2012).

The design studio, whether as a pedagogy or physical existence, has been criticised, with many voices introducing alternatives to the normative design studio we know and experience. This poses many questions: Do we need a design studio within the campus of the university now that students are working with communities and in communities? How does the function of the design studio potentially change when students are engaged in live learning, carrying out design 'in the field'?

2.2.9 Physical Aspects of the Design Studio

When it comes to defining the studio space from a physical standpoint, certain qualities relate to what started in the École des Beaux-Arts in Paris as the first formal academic design studio. Which in fact was a workshop spaces 'ateliers' that hosted the master and the apprentices. Barbour, Osborne, and Caldwell (2013) in their study concerning the perceptions of the design students in regard to their learning environment described the physical design studio as a 'flexible space that supports flexible instructional strategies' (p. 4).

Furthermore, more spatial characteristics were described within the same study, which used a qualitative mixed method approach, including investigation into existing literature, questionnaires, focus groups, and spontaneous participatory research based

on the several studies of RM Associates (2005), Wolff (2009) and Libby (2011). The physical space of a design studio can typically be described as a 'large space' with high ceilings, with flexibility extended to moveable furniture and partitions or screens. The studio is designed in such a way, according to Summer Taylor, that there is no definition concerning where the front or back of the studio is located, utilising a moveable instructor's station to diminish the hierarchal relationship between the instructor and the students (Taylor, 2008).

Crowther (2013) cites Summer Taylor (2008) through case studies carried out in regards what constitutes the physical space of a studio from the perspective of non-designers users:

The physical space of the studio is characterised by a lack of formality; no front of the classroom, movable furniture, desks for drawing and drafting, spaces for model making, computers, projection screens, and space for presenting drawings and models during crits. The aim is to support a flexible pedagogy through flexible physical infrastructure' (Crowther, 2013, p. 226).

The study of Barbour, Osborne & Caldwell (2013) concludes that, in order to have the best learning experience, the design studio is desirably to be equipped with large tables and mobile furniture. The improvement of facilities' management means increasing 'informal learning spaces with soft furnishings and decent amenities' (p. 13), ensuring a clear permission to use the facilities provided to the students.

Looking at the changes of the design studio pedagogy and the influence of the bureaucratic system through the time on the design education, starting with the one-to-one the master-apprentice model, until the current timing and the current issues. These factors are dictating the physical characteristics of the design studio, such as shape, size, timing and location of the design studio to the students. The issues as stated in this chapter, starting with the increment number of the students accepted to study in the university, which implicate the studio hours of access, the size of the studio space. The pedagogy and learning approaches are as well contributing to these physical characteristics. The Live projects, 'fourdaysontheoutside', and the field study are some

of the learning approaches that takes place within the design studio curriculum but takes place outside of the design studio as a physical space.

2.2.10 Design Studio and Collaborative Creative Processes

The call for creativity in learning spaces is considered a priority amongst many scholars and educators in the field of learning and teaching. Tracing back the call for creativity in education, it goes back to the time of Guilford in the 1950, who defines creativity as ‘production of novelty’ (p. 2), although certain studies appeared in literature before that date that referred to creativity in education (Cropley, 2001).

The way of fostering such a behaviour in the learning environment is perceived by collaborating around the production of artefacts (Littleton *et al.*, 2008); this applies for other form of behaviours, such as collaboration, which is sought after within the learning environment. Emphasising the idea of collaboration supports creative processes, as supported in a paper by Vyas *et al* (2009) around ‘collaborative practices that support creativity in design’. It is said that the ‘role of collaboration between co-designers is critical to the design studio’s creativity’ (Vyas *et al.*, 2009:2). In the main, the paper (Vyas *et al.*, 2009) emphasises that the ‘ecological richness of design studio’ usefully encourages creativity through collaborative design tasks.

In order to define collaborative learning within design studio, it is important to embark on its definition beyond the context of design. In a book by Dillenbourg (1999), the author reached the conclusion that collaborative learning could not be defined due to not converging on a ‘shared understanding’ (p. 1). Although the broadest definition for collaborative learning argues Dillenbourg is:

‘it is a situation in which two or more people learn or attempt to learn something together’ (1999:1).

In the context of design studio and Architectural Education, creativity is defined as ‘its relationship to value’ or as cited in “Reality vs Creativity?” by Ruth Morrow, Rosie Parnell and Judy Torrington as ‘Imaginative activity fashioned so as to produce outcomes that are both original and of value’. (NACCC, 1999 found in (Morrow *et al.*,

2004).

Within the design studio, and referring back to the work of Vyas *et al* (2009), the collaborative practices themes within design studio are: ‘1) externalisation, 2) the use of the physical space, and 3) the use of the body’ (p. 2). Within this research, the concern is given to the physical environment of a design studio. The theme regarding ‘use of physical space’ refers to the utilisation of physical spaces related to design studios, in which practitioners and designers support ‘collaboration and creativity’ within their tasks (Vyas *et al.*, 2009:10) suggests that the use of the space in which it can carry ‘inspirational, provocative’ ways of how the information can be ‘represented’ within the space of the design studio. There are some collaborative practices that support creativity processes, as argued by Vyas (2009), as these suggested arrangements could help in ‘establishing creativity’ (p. 11). The first arrangement is ‘elaborate the problem’ by segmenting the challenge. It is then leads to a ‘detailed description’ of the aspects of the design, in which the physical place contributes by exhibiting these descriptions, thus helping in generate more insights towards envisioning the solutions. The second arrangement is ‘awareness’ where:

‘Design iterations, methods, and conventions can be easily extracted when design artefacts and related materials are kept in public visibility using physical space’ (p. 12).

The third arrangement Vyas *et al* (2009) discussed was the ‘personal vs shared’ in which the developed design artefacts are arranged in which a ‘distinction’ can be achieved between shared and personal. It then allows peers to comment, as well as create a ‘portfolio--like arrangement’ to allow users to show their identity (p. 13).

Although the study of Vyas *et al* (2009) covered a ‘broad spectrum of techniques that designers use to aid creativity in cooperative design’ (p. 19), these do not address all the practices that is cultivated within the design studio. It is clear that ‘creativity is a critical aspect of design’ (p. 19). The creativity and design has been substantially tied together; collaboration in design & architecture education is important as it is fostering creative process and also a requirement in practice. The design studio communicates with the pedagogy and the approach; it support collaborative creative processes as it is

using a similar process. Bennett & Broadfoot cite Whiteford around the influence of the Bauhaus methodology on the design studio. It is as discussed that in history of design studio, the methodology of the Bauhaus made its way to enrich students' creativity.

'The continuing influence of the Bauhaus in art and design education takes the form of a faith in the efficacy of foundation courses of one kind or another, and in carefully designed projects given as a spur to student's creativity' (Bennett & Broadfoot, 2003:2).

The process of the design studio, which is based on collaborative learning, aims at supporting the routes to creativity and sometimes originality, argues Wright, although, creativity is encouraged as a feature rather than originality: 'Creativity is presented as the product of applying expertise and imagination to a thoroughly understood problem' (Wright, 2011:113). It is also seen that who judge the creativeness impact on how the students of the design studio perceive the situation. The creativity is being with a negative impact when the students' perception of whether they are creative or not are judged by their tutor only (Morrow et al., 2004).

2.3 Environment and Behaviour

Does the design studio foster the collaborative creative processes? Could the space itself be considered to send messages to the users that will lead people to display certain behaviours?

In recognition of such thoughts, many scholars and scientists now believe in the notion of a built environment having a relationship with human behaviours. A journal, Environment and Behaviour, has been published since 1969, which elucidates many topics regarding the environmental experiences and environmental perception.

Lawson, in his book, The Language of Space (2001), starts by indicating the need for a space to show us how to behave. Reading the space 'correctly' sets the mood, separates activities, and in some cases, 'suggests or invites certain behaviours' (p. 8). According to Bell *et al* (2001), the place is simply the context in which the play is taking place,

but this context provides the right interpretations of what is going to happen. In the same platform, the writers continue by stating:

In real life, our behaviour also occurs in the context of an environment, one that is constantly changing and rich in information. Unlike the setting on the stage, however, it provides more than one meaning' (Bell et al., 2001, p. 2).

Relating space with the settings in which people behave was demonstrated by Lawson, based on Barker (1986), in which he elucidates that the space is a setting, and it consists of the space's surroundings and contents.

It was probably Barker ... when he described how our behaviour is influenced and even constrained by these settings ... He pointed out that settings comprise both the physical and the social environment' (Lawson, 2001: 23).

The process of moving and the way that people position themselves within a place is a form of communicating. The communication and the space complement each other.

In order to understand how environment influences the behaviour of the people within its contexts, a look at environmental psychology shows according to Bell *et al* (2001), the environment is the 'context of behaviour' (p. 2), with which the 'environment determines which behaviour is possible' and they argue that this can be afforded and the possibilities are allowed, or provided, by the environment to allow certain actions; such as sitting, if there is a chair, or moving if there is a way to move through. Accordingly, some empirical studies argue that there is a direct relationship between the building's environment and human behaviours (Pable, 2009; Whitemyer, 2010; Ulrich, 1984). This indicates that there is a need for improving the ways of tackling the design of the building—not only in terms of its functionality and the aesthetics, but also in terms of 'improving the quality and fitness for purpose of building' (Sailer *et al.*, 2009: 2).

The users of the spaces to be developed become a very important factor in the process. The designers and their clients begin to address the importance of the satisfaction of the final users of the area and must work in their method to satisfy those needs.

2.4 Conclusion

This chapter has generated an understanding of the literature around the higher education institutions HEIs as the context of study, and the changes, emerged and new approaches in learning and how that impacts the spaces of learning and teaching spaces physically. This chapter also provide scholarly discussions on the available literature that concerns the learning design studio in the setting of the architectural and design education, starting historically, the context of the United Kingdom, within the curriculum, and physically. The design studio has been always debated, whether its importance or its physical existence, thus, this research aims to highlights the values and the experience it gives to its users. To establish that, the last point in Chapter 2 explores the influence of built environment on the behaviours of the space users. Yet, more in detail investigation should be done on this relation between built environment and behaviour in-depth, with focusing on the experience of the users as a result of such a relation, and the contextual needs of the users on their experience and perception in space. This will be discussed in chapter 3, in another set of literature review that tries to explain the relation in the perspective of experience and users' perception.

"Sometimes it can be easier to change people's behavior indirectly, by altering the physical environment, than it is to modify their behavior directly."

Kristen Mary Kemple

Three

CHAPTER 3: ENVIRONMENTAL BEHAVIOUR LITERATURE

3.1 Chapter Overview

The Design Studio as a physical space has its characteristics. These Characteristics are different to other learning spaces such as the classrooms, learning theatres and laboratories or workshops. This difference perceivably impacts on the students as users of such a space and environment. Away from the pedagogical influence, this investigation in the context of this research is to look on how the built environment of the design studio alone can impact on the behaviour of the users or students. As there is not not many empirical research that look on the design studio in particular. This chapter is looking at the matter generically, trying as much as possible to link it to learning spaces and experiences of users.

In this chapter, the aim is to investigate and explore the how the elements of the built environment, affects the users of the space, setting the scene for the importance of experience. Understanding how these physical elements or features could potentially impact on the total experience of the users within the space. The literature in the field of environment and behaviour is explored, starting with the theories concerning these elements and if possible associating them with the educational situations, paving the way for the analysis of case study findings and the insights gathered from the students to evidence those in the setting of the design studio.

The chapter starts with a discussion around experiences and why they are the focus of this thesis, relating the educational experience to the well-known theories of retail spaces, as an established exemplar in 3.2, where the next points seeks to underpin various elements of design with behaviours, such as the layout of the space, the circulation, and the furniture. It will also look at the contextual needs, as in the system found in the buildings and the cultural impact. At the end of the chapter, emphasis is placed on the ideas of personal space and optimal space.

3.2 Space Designs and Experiences

Experiences are an important factor to keep in mind whilst designing any place. Based on how things work nowadays, most things can be accessed within the limit of a fingertip, with the internet offering remote shopping, teaching, working and even medicine within the comfort of one's own home.

The retail industry has acknowledged this fact, there are studies that look at the impact of the retail design on the human behaviour (Gilde, 2010; Kotler, 1973), especially that some of the bigger stores names only exist online, whilst some others have expanded their online presence to keep customers satisfied. Whilst shopping can be done remotely, one wonders what the physical stores are there for. In this regard, it is stated that the aim of 'retailing is to entice customers in the store and to then make the sale' (Nussbaumer, 2009: 212).

With each milestone in history, whether in terms of new technology, material or a mass change in mind-set, the retail industry has adopted and adapted to change, from being 'convenient' to having 'everything under one roof'. Shonquis Moreno found in Brooker & Weinthal (2013) that, in order for a store to keep up with the current revolution, interior design can help, and, as Rem Koolhaas claims, 'for better or for worse, interior design influences consumption' (Brooker & Weinthal, 2013), although Koolhaas holds contradicting views on the way in which architecture and design inevitably respond to the economy ('Rem Koolhaas on the Horror of Consumption,' 2000). Hence, Shonquis Moreno argues that the space should be designed to offer desire—and that is why designers should design a space that is accounted to provide experience, emotion, destination and so on (Brooker & Weinthal, 2013: 364).

Understanding human behaviour, its patterns and what appeals to the vast majority of the crowd is a powerful tool for keeping business. Experiences are designed based on a thorough understanding of culture and mentality; however, experiences are not a solo creation by the architect and the interior designer, as it is a result of collaboration between multiple disciplines (Brooker & Weinthal, 2013). It is the physical attributions that set the grounds for the experience to take place.

Looking at educational sector in line with the retail sector, which makes sense since the educational sector has been commercialised by the introduction of the tuition fees, students have been recognised as consumers and customers; thus, the attention has been directed towards ‘customer service’. In higher education, where distance learning is much like remote shopping, flipped classrooms and flipped campuses are favoured. Further, the rise in universities that solely operate an online basis has been witnessed. Importantly, however, there is debate concerning whether a human presence in those universities is required in the form of a physical presence, thereby allowing students can visit and interact. This ultimately brings back the case of the Open University in the United Kingdom, which closed many of its centres, claiming that this decision came as ‘response to the changing demand of students’ (Swain, 2015). Students actually have been against this decision as they valued physical interaction and face-to-face communication with which these centres provided them. This requires attention to those disciplines that require students to be physically in the space², creating the ultimate experience that cultivates their knowledge.

In order to design an experiential space, there are some physical implications that should be understood and accounted for whilst attempting at designing a space that provides an experience for its users. As in this research context, unpicking these physical implications can help in understanding the existence studied spaces on the overall experience for its users.

3.3 Spatial Features - Layout

Analysing the space according to its spatial features is one way of examining a space. Whether dividing it into smaller components or looking at it as a whole, spatial features serve as a criteria for analysis (Nussbaumer, 2009). ‘Architectural criteria’ and ‘theoretical criteria’ are one way of analysing historical buildings as precedents, they are

² The researcher believes that education is best executed with both the knowledge provider and knowledge seeker are in the same place, yet, acknowledge the fact that education must be accessed by all, and for many restrictions, distance learning can make education accessible. Yet, there are certain disciplines that require physical attendance such as medicine and engineering.

commonly used in architectural education as to set the grounds and the contexts for any project.

In interior design, the distribution of elements within a spatial setting responds to two criteria, to the function and to the aesthetic. While function can be constrained by furniture, dimensions and so on. The aesthetics are open to forms of groupings and patterns (Ching, 1987).

According to Clark & Pause in their book *Precedents in Architecture*, there are common 'patterns' in design, and these 'can be grouped into dominant themes or formative ideas' (Clark and Pause, 2012: 219). These patterns and organisation to the researcher, as well as a response to function and aesthetic, serve as influences for certain behaviours and conditions.

When the spaces are designed, the spaces in its raw existing form, specially existing structures and in refurbished projects, can send 'clues' to how best 'utilised' (Ching, 1987). It could then be determined how the space is an advocate for the designer. The space, when understood spatially, helps the designer to utilise its potential.

As there are many organisational forms that possibly imply certain activities and behaviours, the context in which these organisations are situated has an effect on the way in which users of the space perceive and use them.

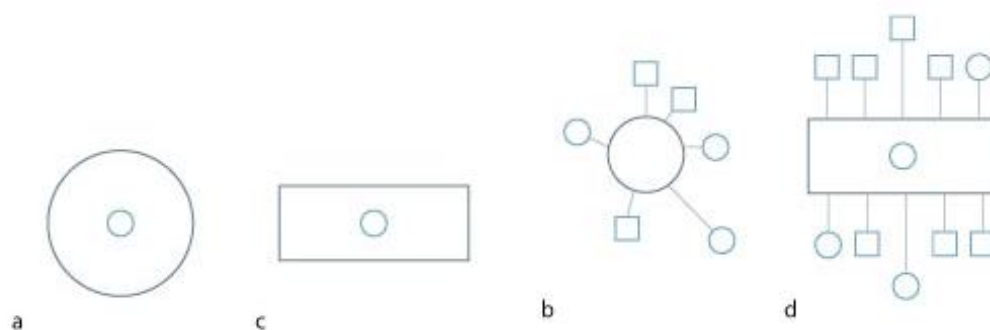


Figure 3 - 1 The four type of Organisational culture types. Source: (Tharp, 2005) found in (Nussbaumer, 2009)

The layout of the space, especially in commercial settings, indicates the structure of the organisation that occupies the space, the organisation of furniture or the space planning show how people behave in the space, and help understand the network of communication within its boundaries (Nussbaumer, 2009). There are four types of organisational cultural types, according to Bruce Tharp, namely hierarchy (c), market (d), clan (a) and adhocracy (b) (Figure 3-1). Each of these organisational culture types demonstrates a certain work style, technical (a), transactional (b), consultative (c) and collaborative (d) (Figure 3-2).

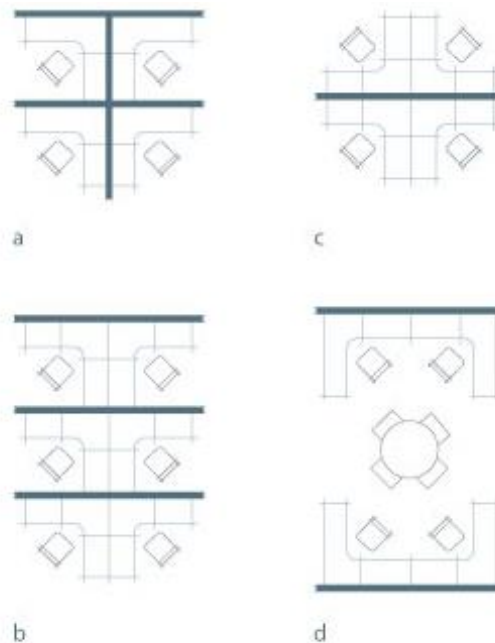


Figure 3 - 2 Work styles based on the work of (Tharp, 2005). Source (Nussbaumer, 2009)

In the case of Hierarchical, the power moves from up to down; thus, there is the control and stability implication. The spatial design of this type of organisational type represents the hierarchical distribution, with a formal and structured place. In the market, it is a goal oriented, very competitive place of working, it is similar to the hierarchical, with sources to the outside.

Opposite to these types is the clan, where more open, friendly environment that is more organic layout, this collaborate culture is promote sharing and participation, making the

culture more like a family, where leaders are mentors and this has proven to strengthen the loyalty and the sense of tradition.

In the last organisational culture type, the adhocracy, the culture of creating, it is dynamic and innovative, as well as experiential. The highly flexible organic environment helped individuals to be initiative and free in such an environment (Figure 3-3) (Tharp, 2005).

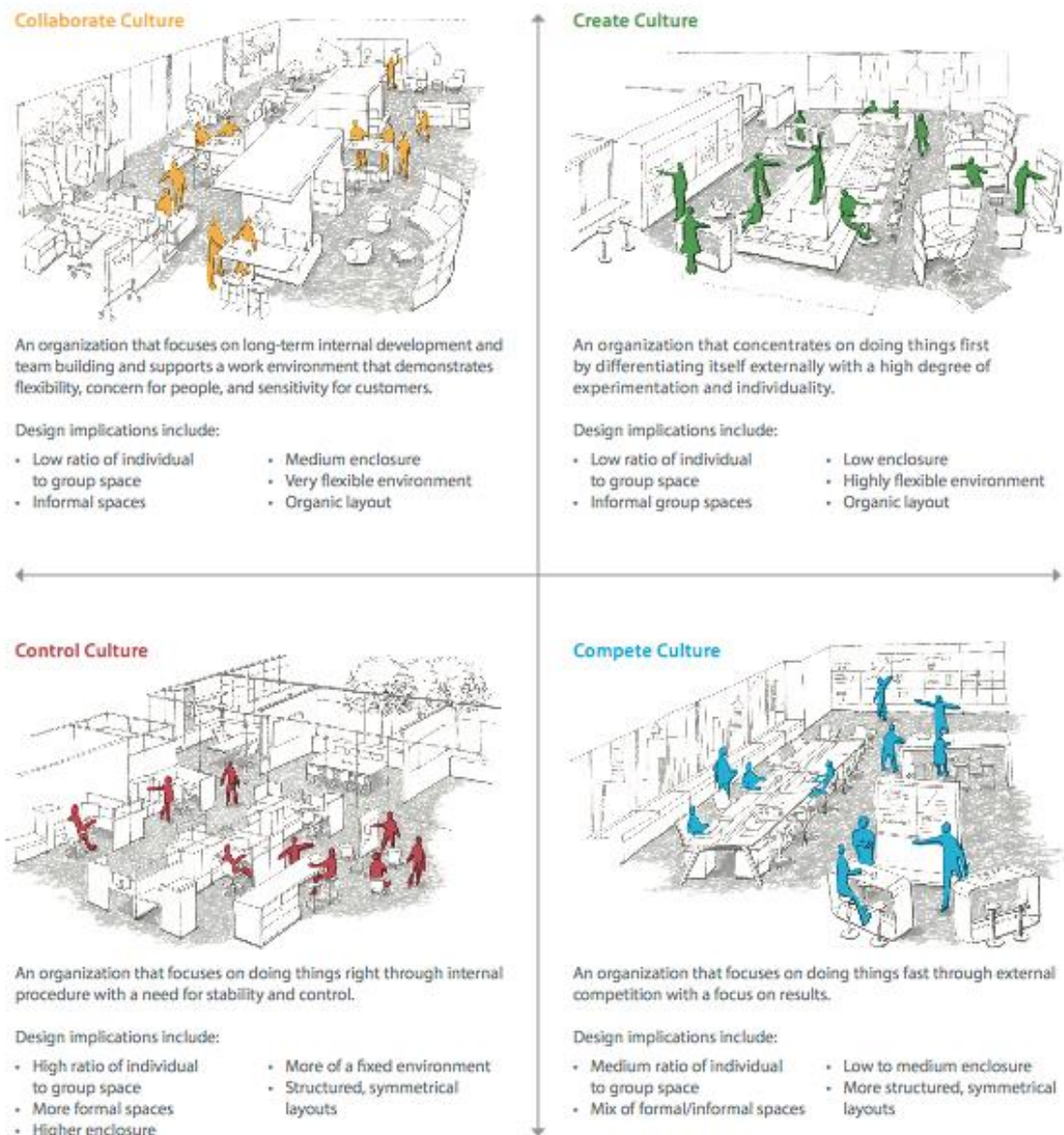


Figure 3 - 3 Organizational culture types By Bruce Tharp. Source: (Tharp, 2005)

Tharp have visually associated the seating's arrangements and configuration with the type of organisation, and its cultural direction, as Tharp's research was done in line with leading office furniture manufacturer Haworth ('Haworth Europe - Office Furniture,' n.d.). Contrasting with other researches, the main stream of those researches was the focus on empirical outcome (Hastings & Schwieso, 1995; Wannarka & Ruhl, 2008; Weinstein, 1992).

The organisation of zones and activities, furniture, equipment and anything found within the layout of the space leads to create circulation, the circulation in a space help the users to navigate between the zones and elements. A good circulation helps also to create the path of users and thus, help to create their experience in the space. Attention to the circulation is part of the safety measure within any space, clear paths that leads to fire exits, and planning of evacuation.

Designing the circulation path to be memorable and easily distinguished has its impact on the experience of the users of the space as well 'The way, as we 'see' it, also includes elements retrieved from experience and memory' (Bell *et al.*, 2001:57). The circulation and the spatial transition in a space are found to gather all the functions and the activities that serves a common purpose. Providing an access or connecting the spaces (Figure 3-4). Openings from one enclosure to another create not only a physical access but even a visual one, which re-enforce the connection between the two separate places whether indoor or outdoor (Ching, 1987).

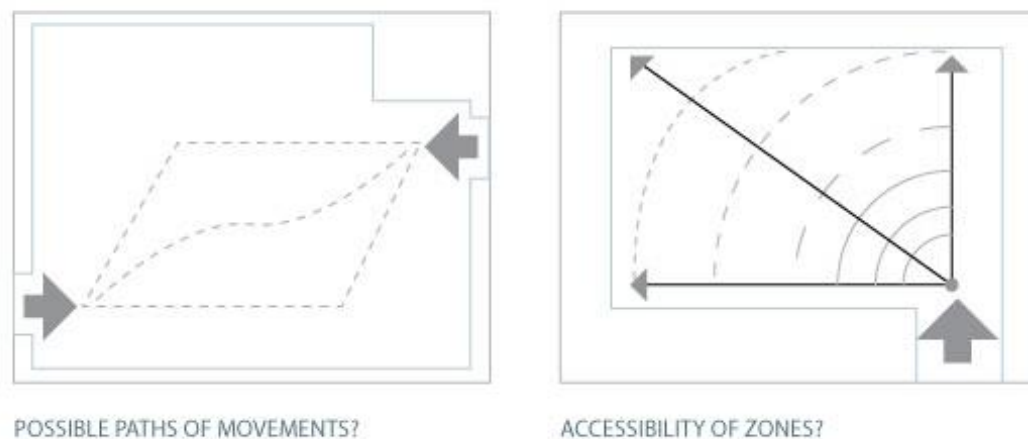


Figure 3 - 4 The accessibility of the space through the openings. Source (Ching, 1987)

The location and number of openings also contributes to the movement and circulation created within the space, and it also dictates the arrangement of the type furniture according to its distance from the opening, (Figure 3-5). As openings can also visually enhanced the space, either by creating a dramatic attraction to the surfaces, or to ‘minimize the perceived limits of interior space’ (Ching, 1987, p. 38).

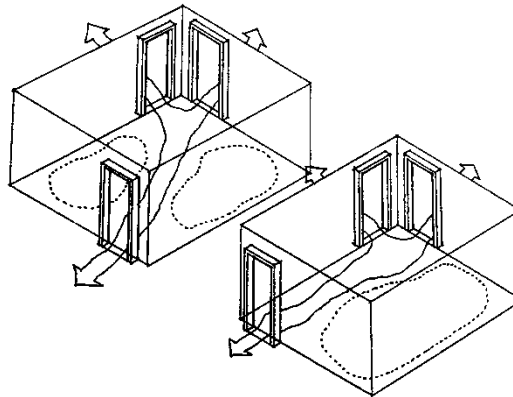


Figure 3 - 5 Doorway location affect the pathway and the furniture and activities arrangements. Source: (Ching, 1987: 37)

3.4 Furniture

Furniture can send messages to how the space can be used and what kind of activities and behaviours that could be promoted in the space. The grouping of furniture (Figure 3-6), the dimension and distances of the furniture in respect with the other furniture in the same grouping and the space, the flexibility of the design and the grouping itself, the orientation of the furniture pieces in respect with the whole space and the degree of how the furniture pieces are merging with the space, for example whether the furniture is a built in furniture, custom made to fit the space corners and angles, or ready made furniture. These factors are very important to how the messages are signalled to the users of the space and how would they behave (Ching, 1987).

The flexibility of furniture movement in the space, can signal the users to move and change them according to their preference and the tasks carried out within the space.

Where if the furniture is built in or fixed, that signals rigidity and the user should accept the space as it is. Sometimes the furniture design, weight, and the material can also indicate how the user potentially use the space.

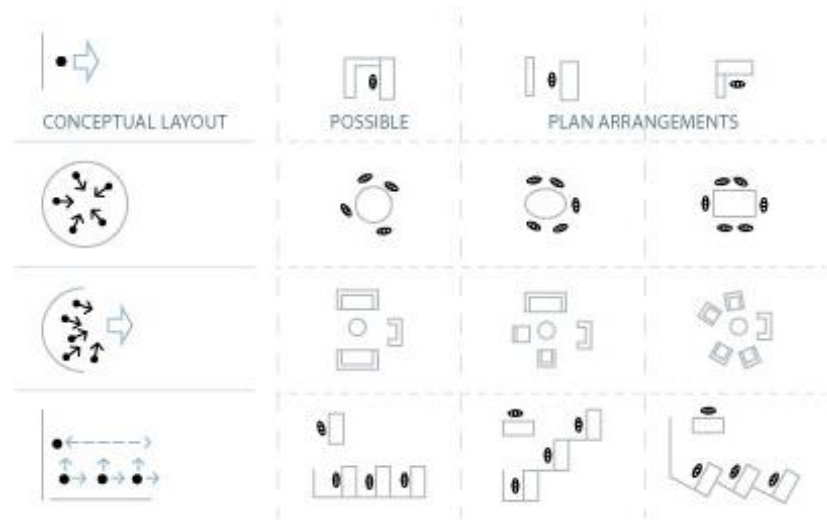


Figure 3 - 6 Arranging the furniture according to the conceptual layout. Source: (Ching, 1987)

3.5 Contextual Needs

Contextual needs are important factors in the design of any building if it is to exist in harmony with its surroundings (Nussbaumer, 2009). Contextual needs could be defined as the conditions the designer of any building has to consider in relation to the building's site. Some of these conditions are related with the environmental control aspect, such as the heating and cooling of the space (HVAC: Heating, Ventilation and Air Conditioning), lighting, and acoustics. However, cultural requirements also present a factor needing to be taken into account.

3.5.1 HVAC

HVAC (Heating, Ventilation, and Air Conditioning) is a system centred on 'conditioning' the interiors. The main purpose of such a system is to create a 'liveable environment'—and that is done by controlling this environment and affecting its comfort and function (Bingelli, 2007, based on Nussbaumer, 2009).

Air temperature, humidity and movement of air should be controlled to the extent that is comfortable for the users of the space—human and non-human. In this regard, dust, pollen and odours should be absent and well-controlled so as to create the very best environment for users to function in the space.

Other than users, the materials selected for the space need to be suitable for the climates created within that space: if it is overly humid, for example, the material in the space should be treated so as to eliminate corrosion, with furniture selected with this in mind.

The function of the space sometimes dictates certain settings for the HVAC systems. In educational or residential settings, for instance, HVAC system noise levels need to be as minimal as possible so as to allow for concentration on the learning experience or to otherwise facilitate optimal environments for sleeping, for example. Some studies have different results towards temperature have an effect on the students' performance in classroom settings, Benson and Zieman (1981), Griffiths (1975) found in (Bell *et al.*, 2001).

3.5.2 Lighting

The light as it radiates, allows the eyes to see. The light shed on a surface or objects either will be reflected, absorbed or to pass through; thus, how this object or surface will be visible to the eyes. The 'ability to see well', is the ability to distinguish the 'shape, colour, and texture' from which another object has. This ability is not a factor of how much light is shed on an object, but it is affected by the factors that Francis D.K. Ching listed, 'brightness, contrast, glare, diffusion and color' (Ching, 1987: 287).

Lighting have an impact on the wellbeing of the users of space, the environment of the space, where the levels of lighting are appropriate, the users can perform and fulfil their activities and tasks 'effectively, efficiently and comfortably'. It is found that in the case of lacking of light exposure, there are increment in the symptoms of 'fatigue and stress' (Michael and Heracleous, 2017). Quality lighting has its effect in providing a space that is 'safe and comfortable, and aesthetically pleasing' (Nussbaumer, 2009) and in case of sun light, the more sun light penetration is associated with higher job satisfaction, less stress in employees (Brooker & Weinthal, 2013). In other study associated with

environmental behaviour concerning lighting and natural light in the space, arguably, the data showed that there is no difference in performance between students who were in a windowless room and those were put in a room with a window (Stone and Irvine, 1994), although being within a close proximity to a window helped to reduce boredom (Brooker and Weinthal, 2013).

3.5.3 Acoustics

Acoustics is the art of augmenting the good sounds and reducing noise, or eliminate the sounds that interfere with the ongoing activities within a space. It is mostly controlled by the materials. Controlling the noise in a space starts by identifying the source of noise, or problems that sound can cause, whether ‘echo, flutter or reverberation’ (Ching, 1987).

The consequence of poorly designed acoustics in space is annoyance. Noise is undesirable in a space, if ‘unwanted’. There are several types of noise, and some has series implication on the wellbeing of people. Loud noise, and the continuous exposure to it can cause ‘physiological damage’, it can also impact on the ‘verbal communication. Bursting noise, without pattern is annoying as well, and the more annoying type of noise is that people do not have control over (Bell *et al.*, 2001).

The annoyance from noise has effects on the physical health of people, hearing loss, and health issues such as rising blood pressure and effect language skills. But as much as it impacts health, the noise impacts the social behaviour of people exposed to it. ‘If noise has stressful, arousing, attention-narrowing, or behaviour-constraining properties, exposure to it will likely to influence interpersonal relationships that are affected by these mediators’ (Bell *et al.*, 2001, p. 159).

According to Bell, Greene, Fisher & Baum, noise can cause ‘distortion in perceptions of other people’ by paying less attention. Noise can also affect the level of aggression in human behaviour. And Noise can also determine the likelihood of people helping those who made that noise, thus interfere with helping attitude. Noise causes irritation which is associated to ‘dissatisfaction’ (Bell *et al.*, 2001). Noise is relatively hard to navigate and control, as noise sources and causes are very difficult to contain and managed (Pellerin & Candas, 2003).

In a classroom setting, the noise can be ‘problematic’ to students’ learning. Studies found in Bell *et al* (2001) provide ‘strong support’ for students who claims that ‘chronic exposure to noise is associated with chronic stress and impairment of cognitive performance’ (p. 156).

3.5.4 Cultural Factors

Users of the space have cultural needs depending on their cultural background and the purpose for which the space is to be used, as well as in line with their preferences as well. During the design stage, cultural factors and needs play a huge role in the layout of the building.

Religion sometimes corresponds to cultural needs, although is not directly considered a cultural need. Furthermore, religion also dictates notions of design for incorporation within the design of buildings, such as privacy, the different ratio between public and private areas within one space, and the limited openness of space.

One of the skills a designer should master is that of ‘Cultural Intelligence’, which may be inferred to mean the ability to understand a culture that is not native to the designer (Nussbaumer, 2009:153).

Linda Nussbaumer, in her book *Evidence Based Designs for Interior Designers*, about the design criteria adopted by designers when designing corporate settings, and how people with different cultural backgrounds should be included:

- *‘Observe clients’ or co-workers’ behaviour to understand the firm’s or individual culture.*
- *Understand that some people are uncomfortable analysing their own culture and may have a difficulty explaining their customs.*
- *Understand that some cultures have different personal boundaries, or distance zones.*
- *Understand that cultural difference might be influenced by various backgrounds (e.g., ethnicity such as Asian, Middle Eastern, German, Native American,*

African or American), or by knowledge, or by profession (e.g., designer, engineer, architect, or accountant).

- *Understand that the use of gesture and/or phrase may be appropriate in one culture or setting, and not in another.’ (Nussbaumer, 2009, pp. 153–154)*

3.6 Building Material

Materials in educational settings have to be selected according to criteria and functions. The materials have certain qualities such as ‘safe, resistant to abuse and easy to maintain’ (Nussbaumer, 2009, p. 225). Knowing the functions and activities that will take place within the space, help determine the materials also. Where the main function of the space is presenting and showing videos for example, the material will have to account for acoustics, lighting and reflectivity and such. There are gaps in evidence of material preferences in educational settings, where observation of the teaching process could potentially bridge some of the gaps of evidencing materials that suits the design for educational settings (Nussbaumer, 2009).

3.7 Personal Space and Optimal Distances

It has been noted that ‘personal space is defined as portable, invisible boundary surrounding us, into which other may not trespass’ (Bell *et al.*, 2001, p. 253). The personal space is considered to be a ‘bubble’ that expands according to with whom we are interacting and how we are moving, and according to situations. The regulation of the expansion of the bubble is measured by how well we know and trust people (Bell *et al.*, 2001).

Furthermore, it is stated that, whereas personal space is moving with the person, territorial space is a stationary form of personal space. This is more defined and visible. Moreover, territorial space is always associated with a group of people rather than a single person (Bell *et al.*, 2001). Moreover, ‘territories also contribute due to their relationship to social roles (e.g., the boss controls his or her office, the company lounge,

the lunchroom, etc.). More precisely, how territories function to ‘organise things’ depends on the particular space in question’ (Bell *et al.*, 2001: 279).

People personalise their territories, which is why they may feel ‘proud’ to be associated with a certain territory. Human territories are characterised by social, cognitive and cultural factors, where similar territories found in non-human groups are typically associated with survival notions (Bell *et al.*, 2011).

In architecture, personal space was first mentioned by Robert Sommer in 1959 (Bell *et al.*, 2001) in his article titled *Studies in Personal Space: Sociometry*. With its roots in Zootology, Robert Sommer initiated ideas investigating personal space on an empirical basis. He used observation and quantitative methods to gather and analyse the data acquired (Sommer, 1959). In this vein, the following has been stated:

‘Both individual perception and social experience inform psychologist Robert Sommer’s notion of personal space. Personal space is the immediate area surrounding a person that is psychologically regarded as one’s own. Often conceived of as a bubble around an individual, it is a form of portable territory that can shift in size and proportion based on situation. Such space is intrinsically tied to what anthropologist Edward Hall (1966) termed proxemics, i.e., the study of human relations in layers of proximity based on levels of intimacy.’

Some research that have been found in the book of Environmental Psychology (Latané *et al.*, 1995) surrounding the topic of goal fulfilment in regards spatial zonings suggest an optimal distance and location for certain interactions to lead to better results. In this regard, when the distance between communicators increases, the social influence between them decreases. This can be applied in many situations, such as in doctor–patient’s scenarios and teacher–student (Bell *et al.*, 2011).

In learning facilities, there are many different types of learning space. Halls or theatre rooms are one type, where optimal spacing is located at the front seats of the theatre, as seen in research (Bell *et al.*, 2011). With regards the typical class room formation, this is best illustrated in the graph (Figure 3-7) based on the works of Stires (1980) and Sommer (1967), as cited in Bell *et al* (2011:264).

Participation from Center and Sides by Row



Seating Arrangement in the New Seminar Room

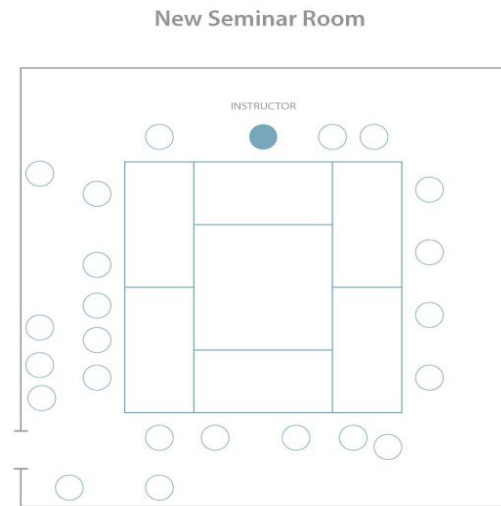


Figure 3 - 7 The percentage of participation of Students in the rows layout in the classroom Source: Sommer, 1967

Where the design studio is not considered a usual classroom or theatre, it is a form of professional setting, whilst being informal in its essence. Working retrospectively, looking at the types of grouping and zoning in the design studio, most of these groupings are found to be face-to-face or otherwise as adopting very small theatre-like (presentation style) types of grouping. These groupings were referred to as ‘sociopetal’ (Bell *et al.*, 2011) as opposed to the ‘sociofungal’ groups found in other learning spaces. Sociopetal spacing brings people together, with such spacing generally encouraging conversation and interaction.

3.8 Conclusion

The literature found in how the built environment and its components can affect the people’s behaviour are vast, especially when looking at retailing design and corporate commercial organisations as exemplary. The idea behind this chapter is to examine the saying that altering the physical environment of a group of people, is the easiest way to alter their behaviour (Kemple, 2004). Evidences based in design that the attention given to the deigns based on studies that took place in healthcare, retailing design and other

sectors have shown improving in the quality of service provided, attracting more customers and staff and help keeping staff (Nussbaumer, 2009), while the consideration of small aspects in design and spatial design helped those institutions.

It is valid that such an attention and consideration could benefit the designing of the learning spaces. However, we acknowledge that ‘spatial behaviour, exactly as any other behaviour, is determined by preferences only. We do not conclude that these preferences are completely independent of the nature of the spatial system in which they are observed, for it is surely a goal of entrepreneurs to change these preferences’ (Rushton, 1969: 400).

Retrospectively, the researcher argues that looking at the built environment of the learning spaces with users and what users prefer would provide a better view on the holistic picture of the learning spaces in the higher education institutions, and potentially highlights the importance aspects of design and design process. This can then lead to the research methodology and framework being built in order to conduct the study and establish the relations between the built environment of the design studio and users’ experience. In the next chapter, the discussion will revolve around the exploration of the methodology and approaches of the research study.



'Architecture is the reaching out for the truth.'

Louis Kahn

Four

CHAPTER 4: RESEARCH FRAMEWORK AND METHODOLOGY

4.1 Chapter Overview

As seen from the previous chapters on the importance of the learning design studio and the literature around experiences and built environment. How the built environment influences the behaviours of users in the space. In this chapter, the theoretical contexts and ideas that have been visited will be combined with practical approaches and strategies in order to create a framework for conducting the study.

The strategy of the research consists of many research approaches, with backgrounds in ethnography, visual and emotional research. The use of qualitative methods is important to gain insightful and in-depth responses from the participants. There are four methods that have been used within this research in the bigger setting of case studies, these methods are observation, visual anthropology, contextual interviews and focus group, which consists of Student Designer Engagement Map and users' drawings.

In this chapter also, the plan of the research is highlighted, starting with the initial research route with public design studio where a pilot investigation and practical interior design project have been carried out at the University of Sheffield library services. The discussion returns then to the original plan of the learning design studio, starting with a survey and then a pilot study to test the effectiveness of the methods used. These methods have been chosen to empower the participants, and to capture the users' experience in the selected design studios from many perspectives, to ensure finding the 'apparent truth'.

The researcher is a tool of gathering and interpreting and constructing the data and turning such data into the knowledge of the research. The researcher lists the roles taken within this research, and the hats worn during each phase of this study. These roles have been all a part of the researcher pursuit to understand, explore and disseminate this research. More importantly, however, these roles are what define the researcher, and, as such, define the way in which this research should be read,

alongside the thinking behind it.

4.2 Research Paradigms

As defined in the work of Collins (2010), ‘a paradigm can be thought of as a lens through which we view the world’. Owing to there being many lenses, there are a number of assumptions that could define how we see the world; thus, how it may be understood. In order to determine what lens to use, it is vital to highlight the rationale behind the research. This is a way of describing the way in which the reality of the research can be interpreted in action. It is also important for the researcher to know the set of assumptions and the claims guiding the thoughts and, as a result, the interpretation process.

There are two aspects of research philosophy or research paradigm, namely ontology and epistemology. The ontology of the research is the nature of its reality, and consider our views on such a matter. For this research, ontology is seen as the impact of the studio design on the behaviour of its users and on the learning process. Although it might be a very small segment of the process of learning and teaching as a holistic view—and in this research it may be focused only within the architectural and design education—this segment nonetheless opens the door for other related segments in order to create a holistic view on the learning and teaching environments.

The epistemology of this research is concerned with explaining the way in which students look at the spatial features of the design studio and how they adopt such features, whether consciously or unconsciously, and accordingly behave in the space. Through the Interpretivist research approach, focus is centred on looking through students’ eyes and understanding their point of view.

Interpretivism as a paradigm associated with the ‘philosophical position of idealism, and is used to group together diverse approaches, including social constructionism, phenomenology and hermeneutics; approaches that reject the objectivist view that meaning resides within the world independently of consciousness’ (Collins, 2010: 38). The interpretivism as Thomas Schwandt defined (found in Architectural research methods) it is the shared ‘goal of understanding the complex world of lived experiences

from the point of view of those who lived it' (Groat & Wang, 2002).

One aspect that can be used in the collection of these approaches, and which makes the Interpretivist paradigm so valuable, is 'self-reflexivity' element, where the research is viewed as an 'identity' to the researcher and the subjects under research. As Collins explains, the researchers use their 'personal motives' to arrange the research. As such, the research becomes unique and less likely to be generalised (Collins, 2010). Moreover, '... unique researcher attributes have the potential to influence the collection of empirical materials' (Pezalla *et al.*, 2012:166)

The Interpretive paradigm, specifically in this study, consists of many research methods, including narrative, art-based, ethnography and action research. Emphasis is placed on the feeling and ways of interacting with space and one another, and underpinning the relations created within that space and the perceived experiences of the users of that space.

4.3 Research Strategy

The research methodology is a unique practice to each research. This uniqueness comes from the fact that each research is a project taking place at different time; most importantly, however, it stems from humans or subjects investigating either themselves or their surroundings. The research can be very indirect and therefore requires more effort than what is written in books. This research in particular is anticipated to be iterative. The iteration will serve the researcher in the inclusion of layers of information acquired from each case study, although unifying the methods is important for the analysis. This research though is not a comparison, it is an investigation and differences are expected. On the other hand, the use of these anticipated differences will hypothetically add depth and steer the project to end up with a well-established methodology of collecting qualitative data so as to inform decisions and create references.

Perceptions and spatial qualities provide two foci of this research. The users of the design studio are a crucial factor to its culture, and what physically makes a design studio is again considered; as an interior design, this is one of the most important

aspects of this research. Therefore, this work will seek to use integrated and adopted methodologies that will capture the significance of the design studio spaces in the eyes of its users.

There are various challenges facing this research investigation. The first is the ability to link three different aspects of the design studio. These aspects are pedagogy, users and physical attributions. Pedagogy involves the way in which the design studio, as planned activities, involve teamwork and collaboration, assessments and tutorials, which take place both within and beyond the boundaries of the design studio, with such boundaries, for example, in the corridors of the building, in the workshop, and within the community, such as in Live projects. Users are those people recognised as involved in the making of the design studios. These people are considered the stakeholders of the design studio, who study, teach and help to decide on the policies of the design studio (although the researcher's focus, in this work, is centred on the first two (Notably, policy makers might be the actual beneficiaries of this study as the study seek to inform their decisions.) The physical attributes are those elements that make the space itself.

Importantly, when it comes to designing this research, the research questions should be identified and highlighted. The key question underpinning this research are as follows:

1. How can the educational design studio, as a physical space, be investigated?
2. What is the design studio as a curriculum?
3. What are students' perceptions of the design studio?

The role of the researcher has shaped the research strategy. Impacting on the type of methods that are used in this research and then how to interpret them. The researcher has put on many hats in order to strategically design the research framework and to analyse the data gathered from the research methods.

4.4 The Role of the Researcher in Understanding the Research

4.4.1 The Researcher/Interpreter

As discussed within the research paradigm, the researcher's background is a crucial element in terms of developing the research. The researcher's education, culture, beliefs

and values are reflected on significantly throughout the research outcome. Bias is a natural outcome within such a paradigm; understanding the background and beliefs will naturally solve the puzzle of this research. There are two phases of the researcher's own life that have led to this research, namely inseparable and interrelated. Nonetheless, when it comes to distinguishing the phases of developing this research, a chronological approach of the way in which all of this has led to the research could be outlined.

4.4.2 The Interior Designer/Tutor

Being in the role of design student, an interior designer and design tutor begins building the bases of design thinking, learning that, through a particular design, the perspectives of where people live can be changed; thus, this gives the right to change the way in which people live. Although this perspective changes later on, design sometimes allows the latter to be claimed.

Importantly, in this regard, the responsibility of being a tutor that seeks to create designers able to complete designs to change people is overpowering.

4.4.3 Service Designer/Researcher

Starting backwards, the last thing the researcher came to understand in the service design programme is that we are not here to change the world; regardless, however, we are here to make an impact. This statement is critical in opening experiences. The research was initiated using the design thinking and design tools to study the way in which design impacts people's lives. Change happens regardless, but to aim for change is ambitious and could be impossible. Nonetheless, aiming for impact, even if minor, can still be inspirational.

4.4.4 The Ethnographer/ The Overall Hat

Choosing to be the ethnographer has clearly impacted this research. The researcher has developed a methodological approach as a reflection across all of the roles adopted, with

the tools chosen to reflect this. The ethnographer has tied all the roles and impacted them to design the research tools and methods as well as a way for interpretation. The qualities that the ethnographer add to the researcher are many, such as the ability to immerse in the subject, the eye for details in the observation and the documentation and the ability to spot interactions and record communications.

With the overall hat, the researcher as an ethnographer had the advantage of using the background such as being a service designer, interior designer and tutor, each that participated in shaping the research. The data gathering method, the ways of interpreting and disseminating the information, were all done in a familiar means to the researcher such as the visuals, drawings and so on. (Figure 4-1).

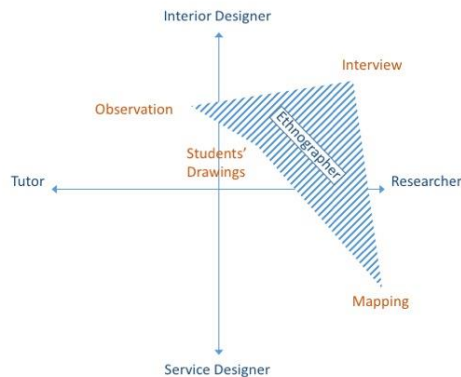


Figure 4 - 1 Mapping the Methods on the researcher's' roles

With the nature of the research question, the researcher designed strategy and the researcher background. The use of qualitative methods was in favour for many reasons, importantly the need to gain an insightful data to answer the research question and to deal with the visual research.

4.5 Qualitative Methods

Qualitative research is related with 'subjective materials', and might adopt the form of word form or images, rather than in the case of quantitative, which focuses on numerical data. In this regard, 'this research approach strives to understand the

qualities of the specific field of inquiry' (O'Grady and O'Grady, 2009).

The use of qualitative methods as a choice has come from the need to understand and investigate the studio and its users, rather than merely describing or listing its qualities. The aim of the research is centred on understanding the norms and behaviour of people using a place, and whether or not that place has a behavioural influence on these people. This is where the qualitative methods are useful in untangling this relationship. The use of qualitative methods is 'favoured' when seeking to tackle 'everyday behaviour' (Silverman, 2010).

The methods have been chosen in line with the different aspects of researches that make this study what it is. This qualitative research embraces the emotional, visual and ethnographic research detailed in the coming sections.

Nowadays, the approach towards research is to 'empower' the participants, through methods that are reflective and conceptualitive. This shift from the 'language-based' to the 'non-textual' methods have surfaced as to be more 'expressive', 'active' and reach more audience as they are not depending on 'linguistic proficiency' (Literat, 2013).

The sketches, photographs – participatory sketches or 'visual voices' - that are shared by the participants are very powerful in telling their own side of the story, and thus sharing their own real experience. It is a way of getting the true information or the 'apparent truth' which has been discussed in the end of this chapter, as oppose to what the participants may think the researcher wants to hear. Arvind Singhal and Elizabeth Rattine-Flaherty shared their own data collection procedure that involved sketches and visuals, they claim:

'by placing pencils or cameras in the hands of people, a facilitator or researcher can gain insights into people's lived experiences, which were previously overlooked, rejected or silenced. The narrative of the sketch and the photograph can become a participatory site for wider storytelling, individual agency and community action. However, in analyzing sketches, paintings and photographs – which are social and technical constructions – it is as important to foreground the absence of particular characters or scenes as it is to explicate what is present.' (Singhal and Rattine-Flaherty, 2006)

The use of this variety of methods serves several aims that are generated from the research question. Each method explores, enquires or solidifies the data that have originated from other methods, some of these methods were adapted from being a service designer. It is then the interpretation of the researcher that changes this data to information that can be used in the research outcome. And the influence of the role that the researcher adapt is what impacts on this data, the type of data gathered mainly has been in the form of visual materials. Which stems back to the background of the researcher and the familiarity of working with such data as tutor, interior designer and as ethnographer.

Most of the methods used in this research are not 'standalone' methods that the researcher acknowledges; together, they form the strategy of the research and the research framework. The reason behind this strategy, that some of the methods are subjective and they may not be 'replicated' like a science experiment, which in the case of this research is required because of the uniqueness of the design studio and the test is towards experiences. The methods are insightful and help to unpick the internal story of the research on hand. Interviews as a method came later to 'qualify' the researcher's position (O'Grady & O'Grady, 2009). As a reminder, these methods were chosen in line with the research aims and objectives, which the key words of the whole research were to 'understand' and 'relations' from the perspective of the researcher and the participants of this research. And that is why the researcher chose the qualitative methods, as they are best serve the purpose of this research aims and objectives.

This research seeks to develop understanding in how processes and design are related. The work carried out by Vijay Kumar is focused on methods in the design innovation process. According to Vijay Kumar, methods that are used in business and derived from the design context can be categorised under seven modes. In the design innovation process, each of the modes has its own goals and activities. The seven modes are illustrated in (Figure 4-2).

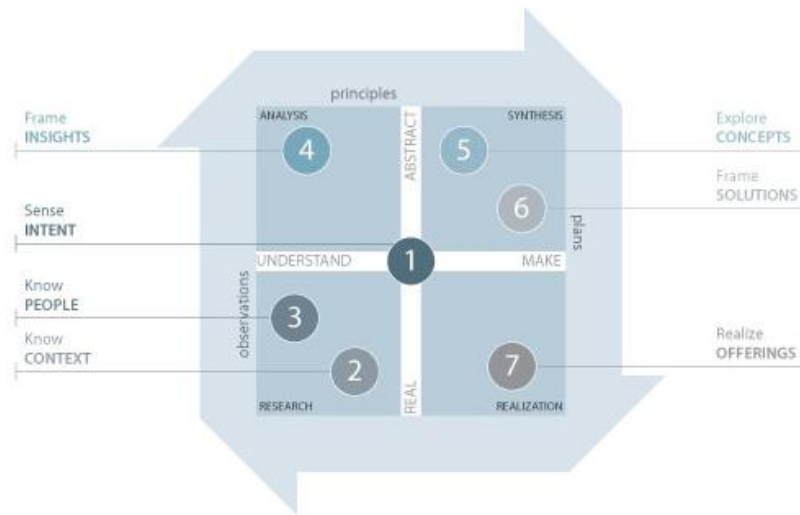


Figure 4 - 2 Illustration of Design Innovation Process by Vijay Kumar Source: (Kumar, 2013)

Kumar claims that, in order to achieve a reliable innovation, the design innovation process should be understood in line with the lifecycle of the process (Kumar, 2013). The nature of the process is iteration, as it is not a ‘direct sequential push’. Yet, in the context of this research, the focus is on the mode ‘framing insights’ and gaining different perspectives on the research, importantly, mapping experiences and making frameworks. And the iteration has been done on the level of the case studies within this research.

Mode framing insight is achieved in this research by the use of methods such as observation, ‘Student Designer Engagement Map’ which is a method derived from Service Design and Business methods (More on Student Designer Engagement Map in the Research Methods), and analysing responses from users of the space which will be discussed in the coming sections.

The research has been disseminated with the use of four methods under the umbrella of case studies. Those methods are as detailed in the coming sections: 1. Observation, 2. Visual anthropology, 3. Focus group and 4. Contextual interviews. Although the use of a

case study is common in research, the tools and their combination forms the base of the framework of this research. Collecting the data came in both roles, as the researcher and designer, was a balancing act. The designer role was considered most important in that phase as the researcher would look at the data collection as a whole approach to gathering as much data as possible, so as to form a research. The role of the designer was centred on filtering these data at the source and harnessing the researcher to make the data more sensible. Familiarity with the data collection tools and methods came from the service designer role. Being Ethnographer has its roots in Service design, where such methods were taught and experienced during the Masters of Design for services at Duncan and Jordanstone College of Arts and Design (DJCAD).

More specifically, the PhD is a continuity of the Masters project completed around the question, ‘Could design tools promote collaboration through the thoughtful design of education spaces?’ (Reem, 2013, unpublished). In order to investigate this question, a tool has been designed and cards set. Based on workshops and journey maps—both of which are a very important part of this current research—the cards were utilised and referred to as space to co. or space to collaborate. These cards have three categories; when used together, they contribute to collaboration in educational spaces. These three categories include the design elements, behaviours, and things to remember, or rituals. Although the tool itself was not utilised in investigating this research, the outcome of the master’s research has influenced the beginning of the PhD research, and the methodological approach with the tools used are somehow similar in direction.

4.5.1 Research Methods

Under the umbrella of Case studies, the methods were used in order to fulfil the aspects of the research and to investigate the space, the users and the processes. (Figure 4-3).

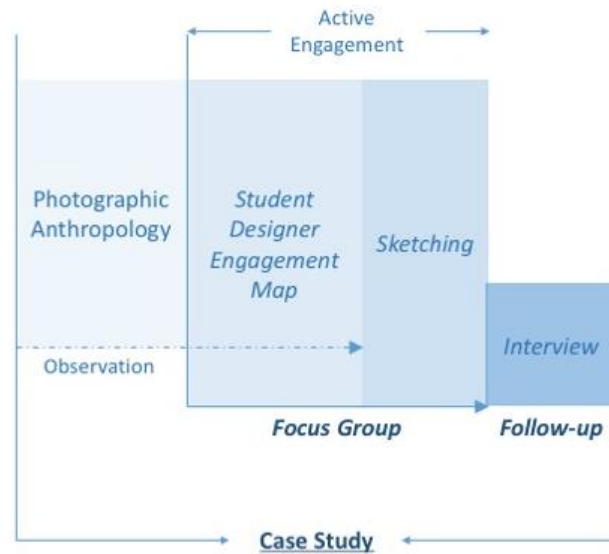


Figure 4 - 3 The process of the case study and the methods used. Source: Author

An in-depth overview of the methods used and their use in relation with the overall research question, aims and objectives are detailed in the coming points:

Observation

Observation is a way of viewing with interest but without interaction with the subject viewed. There are two ‘distinct’ ways of observation, namely structured and unstructured. In the Interpretist paradigm, as in the case of this research, the unstructured observation is widely used. According to Mulhal (2003), the unstructured observation ‘acknowledges the importance of context and the co-construction of knowledge between researcher and ‘researched’. observational method is used mainly to check ‘whether what people say they do is the same as what they actually do’. With the Unstructured observation there is also the benefit of informing ‘about the influence of the physical environment’ (Mulhall, 2003), which is the main aim of this research, using observation serves three of this research objectives,

1. To identify any physical/spatial characteristics that might define the design studio.

2. To determine the criteria for generating information on how the design studio contributes to users' experience.
3. To investigate the perceived value of the design studio to the users of such a space.

Observation was used to look at the research in an interrupted way through the researcher's own eyes. The researcher tried to be detached from any presumptions and what to look for. According to O'Grady & O'Grady (2009), the successful way of conducting an observational research is by 'remaining quiet and observant, and trying to understand the behaviours exhibited', and keeping objectivity and avoid any interaction with the researched subjects are a thumb rule in the observation. The unstructured observation was one way to achieve this:

'...observers using unstructured methods usually enter 'the field' with no predetermined notions as to the discrete behaviours that they might observe. They may have some ideas as to what to observe, but these may change over time as they gather data and gain experience in the particular setting.' (Mulhall, 2003, p. 307)

The researcher kept observational notes in three forms, as shown in Appendix 2: one was an annotation plan that recorded the movement of users in the design studio over a period of time; the second was observational notes; the third was in the form of still pictures that have been used later in visual anthropology.

Visual Anthropology:

Photo ethnography is a 'field exercise in which subjects are asked to record their daily experiences with still or video cameras' (O'Grady & O'Grady, 2009, p. 30), and is referred to as Photo-elicitation (Rose, 2016). In the context of this research, the ethnography research was focused and concentrated within a very short period of time. Thus, the researcher took an active role of documenting the behaviours and the spatial features of the subjects and the users of the space in question. This practice is called 'Visual Anthropology' or 'Photo-documentation' which differs from the point of whom the visuals is taking by, commonly misunderstood with photo ethnography or photo-

elicitation. O'Grady & O'Grady have defined Visual Anthropology as 'a field research tactic that uses visual media to aid interpretation of cultural behaviour' (2009: 186). Rose (2016: 308) defined it as 'a researcher takes a carefully planned series of photographs to document and analyse a particular visual phenomenon'. Further, Hockings defines visual anthropology as follows:

'It is where three- dimensional objects or else images made on paper or on film by a photochemical process are being interpreted and understood, ... using a century's theoretical developments in our global study of cultures and societies' (Hockings et al., 2014: 436).

The purpose of visual anthropology is to provide 'samples' of evidences in order for the researcher to develop 'insights' on the subject in question (O'Grady & O'Grady, 2009). In this research, there are two objectives that this method contributes to achieving:

1. To determine the criteria for generating information on how the design studio contributes to users' experience.
2. To identify the qualities and features of design studio spaces/areas where collaborative process takes place.

There is clearly a debate as to the adequacy of this method, the training of the researcher, the subjects that are observed and photographed are aware of the researcher's intentions, thus, 'might not behave in a truly candid fashion' (O'Grady & O'Grady, 2009). There is the fact that the photograph might be true to its time of taking only 'Photography can clearly enter into the establishment of the truth or falsity of a statement'(Hockings *et al.*, 2014), this has been negotiated in the limitation at the end of this chapter and the analysis.

Focus Group:

A focus group is a way of immersing the researcher with the group of interest in the subject of the research. To define focus groups, as the name implies, they are controlled 'discussion' with a 'limited number of participants', and with the presents of a 'moderator' looking at a certain and specific 'topic' (Kumar, 2013).

The use of focus group has many benefits to the research and the researched subjects. For the benefit of the research, discussions and insights have brought in ‘new perspectives’ and new topics that might not be thought by the researcher, it ‘captures’ the latest issues in the topic, and ‘facilitates quick and early discovery’ while it ‘reveals patterns’ (Kumar, 2013, p. 85). Focus groups also used to the benefit of the participants, to make them feel that their ‘opinions are valued’ and that they are the ‘experts’ in this context (O’Grady & O’Grady, 2009). This relates back to the idea of ‘empowering’ the participants in the research.

In the context of this research, the use of focus group has been to allow students to give their opinions and insights in regard with the design studio space. The environment that these focus group took place was also the context of the research which is the design studio. Yet, although each and every individual in the focus group have their own opinion. The approach is to consider each design studio group as one. So the subject of investigation in this method is the design studio users as one.

The focus group is not a standalone method, because there is the risk of the participants being too opinionated or not telling the truth. To eliminate any conflict that could arise, like dominance of opinion that might hinder the focus group, and the fact that the assumption of the researcher that ‘honesty’ and what the participant are telling the ‘truth’ or the ‘apparent truth’, the use of two probes to maintain the validity of the focus group in this research. These probes are Student Designer Engagement Map, and User’s Drawings, each of which is discussed below.

Student Designer Engagement Map:

The Student Designer Engagement Map is a method derived from the Customer Journey Map. A Customer Journey Map is a blueprint that is filled by the customer of a company or an organisation regarding a service that they provide. It is a tool that has been widely used in service design and business development, where the use of customer and business methods are not easy in the academic context. This is unmistakably clear in Higher Educational Institutions, where students consider themselves customers since the government has introduced tuitions fees (Bunce *et al.*,

2017): they shop for courses in the first instance, take loans in order to be on that particular course, and are included in the Consumer Right Act as of 2015. The universities themselves, regardless of the educators' thoughts and dissatisfaction, have taken the approach of marketisation, with the inclusion of students through their feedback and National Students Survey NSS (Cuthbert, 2010). The researcher acknowledges that this situation is not ideal as it compromises the role of educators and the university; the fact is, however, that this is the current situation and, with the strong belief from the researcher in empowering students and giving them the best experience, they will achieve improved performance as students and when they start their professional life. The other reason behind the use of the business design method is the researcher have been using and studying these methods through the course of Design for services (refer to the role of the researcher in understanding the project earlier in this Chapter), and the power of these methods in recording experiences and perception is what this research needs to capture the situation. The idea behind the Customer Journey Map, according to Rosenbaum, Otalora & Ramirez is as follows:

'The fundamental idea behind CJM is relatively simple; it is a visual depiction of the sequence of events through which customers may interact with a service organisation during an entire purchase process. CJM lists all possible organisational touch-points customers may encounter during the service exchange process. By clearly understanding customer touchpoints, senior management can work with cross-functional team members to employ tactics that foster service innovation. The goal of these tactics is to enhance customer service provider interactions by improving the customer experience associated with each touchpoint' (Rosenbaum et al., 2017: 144).

In the Customer Journey Map, touchpoints provide opportunities for developments and innovation, where pain points highlight problems that need attentions by the service provider (Kumar, 2013). This is recorded according to the phase of the service and its logical sequencing. While this is the bases of the Customer Journey Map, the one used in this research is an adaptation of the original one used in Business development and service design. With the form adapted from the Customer Journey map, the Student Designer Engagement Map is the name of the blueprint used in this study.

The reasons behind using Student Designer Engagement Map are several, but the most beneficial reason is that it is providing a ‘high-level overview’ of what matter to the users from their perspective, it also highlights these influential ‘factors’ in the users’ ‘experiences’ (Stickdorn & Schneider, 2011).

With the Student Designer Engagement Map, there are three major layers of investigation that have been added to the Customer Journey Maps used within this research. The first layer is the active zone, and the second is the opportunities for collaboration while the third is the emotion (Figure 4-4). The emotions layer, as the researcher anticipated, would enrich the Student Designer Engagement Map and makes it more user-centred and -focused. The map also helps to ‘facilitate empathic engagement’, as it is produced by the users of the service or, in this context, the design studio as a curriculum and as a learning space (Stickdorn & Schneider, 2011).

The use of the Student Designer Engagement Map within the focus group has initiated many conversations and discussions with the participants, and has also limited the off-subject conversation and was used as a reference when things went quiet or otherwise when a subject has been over discussed.

Project(Phase
Experience
Pain(Points
Touch(Points
Active(physical(zones
Opportunities(for(Collaboration
Students(Insights
Emotions

Figure 4 - 4 A blank Student Designer Engagement Map with the three layers addition by the researcher. Source: Author

The subject in the Student Designer Engagement Map are the users of the design studio, with this definition, they are not treated as individuals, but as a whole. Which consider their conversations, their interactions and the overall Student Designer

Engagement Map as one result to this method. Thus the coding of the conversations is recorded with the design studio and the university, not with individuals.

While the Student Designer Engagement Map took the most of the focus group allocated time, and it was a form of a group activity that helped the group to discuss amongst them the topic of design studio and their emotions, touch points and pain points. There was a need for of reflection, in a solo activity, that would capture the individuals' perception of the design studio, hence the Users' Drawings activity.

Users' Drawings

To continue with the broad idea of empowering the participants, and as one of the objectives of this research is 'to investigate the perceived value of the design studio to the users of such a space', we return to the data collection procedure discussed in Singhal & Rattine-Flaherty (2006), which considers people's drawings as their experiences, and gains insights by placing a pencil or a camera in the hands of people.

The task was set after completing the discussions and the Student Designer Engagement Map, at which point the researcher handed out sharpies and paper and gave five minutes for the participants to draw their optimum design studio. The intension was to capture the participants' initial thoughts, hence the sharpie not a pencil. As architecture students has a tendency to overthink the tasks.

Contextual Interview:

To serve the triangle that has been initiated at the beginning, and to validate some of the outcomes and the insights from the other methods. Specifically, these methods are subjective and claimed that cannot be used as standalone methods. Interviews have been used to inform this research with the insights from the other users of the design studio, such as the tutors and the module leaders. It has been used in some of the case studies not all, in the other case studies were interviews have not been possible to conduct, there have been an informal chat to bridge the gap of information between the researcher and

the tutor or the person who gave the researcher the permission to enter the premises of the design studio at the University.

The semi structured contextual interviews were chosen as a validation and expressing opinions from the other users of the space. It is a qualitative, ethnographic method, where the broad spectrum of the researchers and academics rely on the semi structured interviews and for their rigorous and objective way of generating data.

Semi structured interviews or the informal chats have also served to understand the norms within each design studio. As what one observed behaviour might be acceptable in one design studio and in the bigger context of the school, might not be acceptable within the others schools or studios (Gislason, 2010).

Contextual interviews are those interviews that are being conducted in the environment of the service, or in this case the design studio. Just like how this happened in the focus group. These semi structured interviews, or the informal chats, took place either in the design studio or the boundaries of the design school. According to Stickdorn & Schneider, 'This ethnographic technique allows interviewers to both observe and probe the behaviour they are interested in', it is also important to 'take in the account the environmental prompts that might help provoke a more in-depth discussion' (Stickdorn & Schneider, 2011: 162). Being in a familiar environment, or in the environment itself of the question, help the researcher to observe specific details that the interviewers remember and point to while conducting the interview (Stickdorn & Schneider, 2011).

The contextual interviews as they are in this research a few, the researcher coded them according to the themes generated from the use of other methods used earlier such as the focus group and the observation. Then these thematic analysis has been used to cross reference with the other analysed data. Then these findings were disseminated in the case studies chapters from 5 to 8.

The triangulation of the methods used, there is this notion of whether the findings of this thesis could considered rigorous, it is safe to say that the interpretation is true to the interpreter at the time the research took a place, as well as being valid to the sample that agreed on taking a place in the research. Throughout the course of collecting data and generating information, the researcher was cautious to include the views of the

stakeholders of this research (Students, Tutors and University). The ‘apparent truth’ lays in the middle of the intersecting views (Figure 4-5). Hence, this is not an attempt to generalise outcomes, more of an attempt to understand, shed the light and recognise there is a process that could be used to understand relations between space and their users.

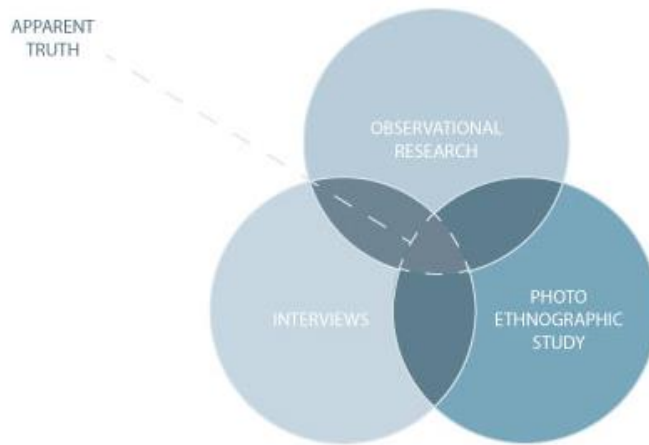


Figure 4 - 5 In order to validate the findings, different research tactics are used. Source: O'Grady & O'Grady, 2009

4.6 Ethnographic Research

Ethnography has its roots from anthropology, but widely used in researching other disciplines. Groat & Wang define ethnography as a qualitative research approach as ‘...[ethnography] emphasises in-depth engagement with its subject, ... ethnographic research culminates in a rich and full delineation of a particular setting that persuades a wide audience of its human validity’ (Groat & Wang, 2002: 182).

The characteristics of ethnographic research includes the focus on small number of cases, exploration a ‘rich’ and not ‘pre-coded’ data, and then to analyse the data based on ‘the meanings and functions of human actions’, and the most significant character of this research approach is being able to participate in the observation. (Groat & Wang, 2002).

4.6.1 Visual Research

Many researches depend on visual data, such as photos, drawings and sketches, etc. Researchers acknowledge that visual research is rigours and reliable: ‘As the visual has gained this more established role in academic and non-academic social science research and representation, qualitative researchers from different disciplines have interrogated the existing literatures of visual anthropology and sociology to develop and inform their work’ (Pink, 2003:179)

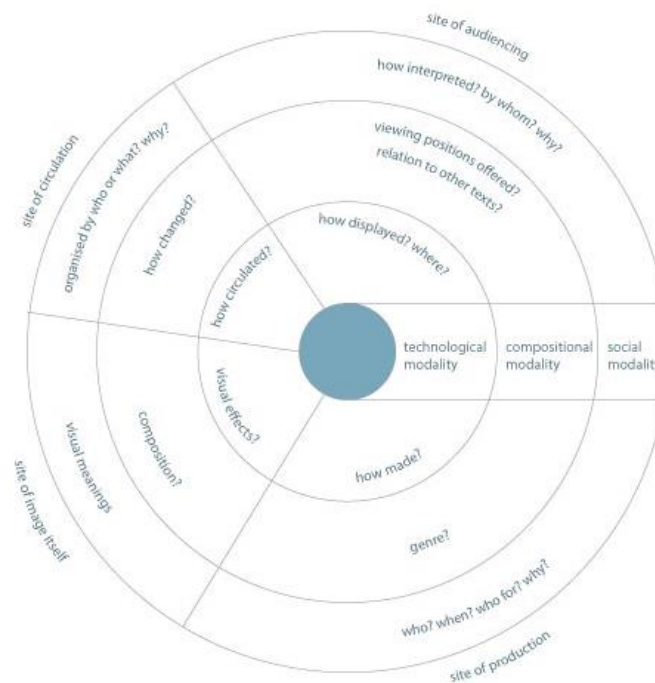


Figure 4 - 6 The Four sites and modalities for interpreting visual materials. Source: Rose, 2016

The take on visual research considers the subjectivity associated with it, looking beyond the visual in hand to be holistic. Although the photo is worth a thousand words, the way the photo is taken should be considered. Pink elucidates on the matter, stating, ‘I would argue that in any project a researcher should attend not only to the internal “meanings” of an image, but also to how the image was produced and how it is made meaningful by its viewers’ (2003:186).

As interpretation of the visuals is very important, the analysis of the visual data is as important as the data itself. Gillian Rose (2016) has argued that in order to interpret a

visual material critically, a weighted decision of the importance of aspects from four ‘sites’ of critical visual methodology, and their three ‘modalities’ have to be made (Figure 4-6). The four sites as Rose illustrated are the site of production, the site of the image, the site of its circulation and the site of where the audience see the visual material. The three modalities are the aspects of which together can form an understanding of the visual material on hand, and those are the technological, compositional and the social (Rose, 2016:25). Refer to Chapter 9 section 3 on analysing visual data.

In researching around physical environment, there are factors of visual cues that researchers are trying to figure from the data. According to Sanoff:

‘We rely on the interaction of characteristics or cues such as size, shape, colour, brightness, position in the field, overlay, linear and aerial perspective, movement parallax, light and shade, accommodation, convergence, and stereoscopic vision’ (Sanoff, 2016:14)

Photo-documentation has been used as a method in this research. Photo-documentation ‘assumes photographs are accurate records of what was in front of the camera when its shutter snapped’ (Rose, 2016:310). These photos are taken by the researcher for the purpose of the research, and analysis.

4.6.2 Emotional Research: Building Empathy

Empathy is a quality that is important to the designers and the design process, it is best described by Kouprie & Visser (2009:440):

‘Empathy serves to inform and to inspire designers to create products that fit the user’s needs. Many authors mention the “empathic” factor in design and indicate avenues of inquiry; however, the definition of what “the empathic” exactly is stays rather intuitive. It is related to a deep understanding of the user’s circumstances and experiences, which involves relating to, more than just knowing about the user.’

In service design, empathy is the ability to understand the people through their

emotional experiences. The definition of empathy in one of the leading Service design organisation IDEO: ‘the ability to be aware of, develop an understanding of, and be sensitive to, another person’s feelings and thoughts without having had the same experience’ (Battarbee *et al.*, 2014)

Empathy within the design process has the power to ‘enhance the ability to receive and process information’ (Battarbee *et al.*, 2014). Thus, enhance the ‘cognitive’ and the ‘affective’ empathy in the researcher or the designer. Where affective is an ‘immediate’ and automatic and natural response. The cognitive is more reflective and understanding (Kouprie & Visser, 2009) Empathy in the design process has four phases, discovery, immersion, connection and detachment, as seen in Table 1.

Discovery Entering the user’s world Achieve willingness	The process starts with the designer approaching the user. He makes a first contact with the user, either in person or by studying provoking material from user studies. The designer’s curiosity is raised, resulting in his/her willingness to explore and discover the user, his/her situation and experience
Immersion Wandering around in the user’s world Taking user’s point of reference	After the first encounter with the user’s experience, the designer takes an active role by leaving the design office and wandering around in the user’s world (data from qualitative user research). The designer expands his knowledge about the user and is surprised by various aspects that influence the user’s experience. The designer is open-minded, interested in the user’s point of reference. He is being pulled into the user’s world, and absorbs without judging
Connection Resonating with the user Achieve emotional resonance and find meaning	In this phase, the designer connects with the user by recalling explicitly upon his own memories and experiences in order to reflect and be able to create an understanding. He makes a connection on an emotional level with the user by recalling his own feelings and resonates with the user’s experience. At this phase both affective and cognitive components are important; the affective to understand feelings, the cognitive to understand meanings
Detachment Leaving the user’s world Design with user perspective	The designer detaches from his emotional connection in order to become ‘in the helpful mode’ with increased understanding. The designer steps back into the role of designer and makes sense of the user’s world. By stepping back out to reflect, he can deploy the new insights for ideation

Table 1 The phases of empathy, the framework to support the empathic approach in the design process. Source: Kouprie & Visser, 2009

The use of design for services approach facilitates the evaluation of the emotional research. The design for services methods and ways of analysis enable the researcher to build empathy with the users of the service—to consider the design studio as a service and the students as the users of this service for relating purposes; thus, As Meroni & Sangiorgi in their book *Design for Services* clarified the potential of Design for Services which is focusing on ‘evaluating and designing service interactions, relations and experiences as its main area of intervention’ (Meroni & Sangiorgi, 2011: 206).

Looking at interactions, relations and experiences help to create or improve services that are better and more effective to its users. Design contributions of the methods derived from and used by Design for Services have three possible influences. First, enabling to start ‘empathic conversation’ between users and researcher that allows ‘deeply understand, visualise and interpret peoples’ behaviours, experiences and practices as a starting point to improve services’. The second contribution is to evaluate and design the ‘empathic interactions’, which is stimulating the users’ ‘social intelligence’. And the last one is the ability to generate ‘meaningful design solutions’ based on the facilitation of ‘co-design process’ between users (Meroni & Sangiorgi, 2011: 206).

Empathic design is a solution that can pick up things that could not be picked up by the usual methods, Leonard & Rayport, who have created Empathic Design, explain,

‘But to go beyond improvements to the familiar, companies need to identify and meet needs that customers may not yet recognise. To accomplish that task, a set of techniques called empathic design can help. Rather than bring the customers to the company, empathic design calls for company representatives to watch customers using products and services in the context of their own environments. By doing so, managers can often identify unexpected uses for their products, just as the product manager of cooking oil did when he observed a neighbour spraying the oil on the blades of a lawn mower to reduce grass build up. They can also uncover problems that customers don't mention in surveys, as the president of Nissan Design did when he watched a couple struggling to remove

the backseat of a competitor's minivan in order to transport a couch' (Leonard & Rayport, 1997: Website).

Immersion in the users' world and building connection are fundamental for the empathic design, designing the methodology of the research and selecting methods that enable the researcher to be in the users' world and understand the users' point of view. Thus, the data gathered could be interpreted by the researcher in a way that the researcher can relate to what the users are encountering.

Although, the researcher comes from a background of being a student, tutor in the place in question, which gave a preconception hypothesis of what to look for and might expect to find (refer to section 4.9 The Role of the Researcher in Understanding the Research). In this research, there has been a need to be focused on catering for the uncertainty. The uncertainty in this project to the researcher came from the fact that each case study chosen is unique in its location, curriculum and profile. During the data gathering process, the researcher tried to detached from being tutor and went into the process without any preconceptions and judgements. While through the analysis phase, the immersion in the subject as well as the background of the researcher and tutor were present.

The need for empathic conversations in this research between researcher and user serve many purposes. Although, the ultimate purpose of the empathic conversation is a way to develop a new or improve a service. In this research, it is a tool used to understand a process. As no service is to be designed or created. The first purpose is what the empathic conversation was meant for initially, which is the ability to understand and interpret the behaviours and experiences in order to develop the best service. In this research this empathic conversation serves as a reminder of what was it like to be in the shoes of the users. One of the things about research is that the process of empathy differs in its order of phases as the researcher is considered to be immersed in the users' world. Being the user once, and observing and participating with the users frequently. Detachment from the users had to come in an early stage to look at the users' world with a fresh eye, before immersing again. The detachment in the analysing stage was in the right chronological order.

4.7 Initial Plan

This research is intended to revolve around the design studio as a physical space and the design studio as a pedagogy, whilst referring to the experience of the users of the design studio. In order to achieve such, the plan was to select the best method that could fully capture the essence of the design studio. The data gathered needs to provide a perspective into users from various different angles and perspectives. It is considered that, by so doing, the research as a whole will be validated.

The plan is focused on beginning to research the methods that could potentially help and add value to the research, whilst at the same time surveying universities for different design studio configurations that will add variety to the research. Thus, it has been recognised as beneficial if the research was to utilise case studies out of universities in the United Kingdom (Figure 4-7).



Figure 4 - 7 Location of the case studies that have been done in the research. Source: Author

In order to achieve this objective, a number of different methods and strategies are adopted in order to complete the research; some are exploratory in nature whilst others are explanatory. The aims of using these methods and strategies are outlined as follows:

- To explore the potential design studios, which the researcher will thoroughly study. This will be based on an initial investigation of each factor (pedagogy, users and spatial attributes) that shape each of the design studios.

- To clarify the link between these factors and their contribution in terms of making the design studio reputation.
- To help achieve understanding as to the relationship between users' perceptions and the physical attributes of the design studio. And, thus, why certain behaviours are identified at design studios.

The study uses case studies, beginning by being descriptive in terms of what happens within the selected design studio of each study. It mainly describes the phenomena of users' interactions amongst them and with the space. The planning, in terms of answering these enquires (Figure 4-8), will be carried out across the following steps:

- Survey
- Ethnography (Observation—Annotation plan)
- Focus group

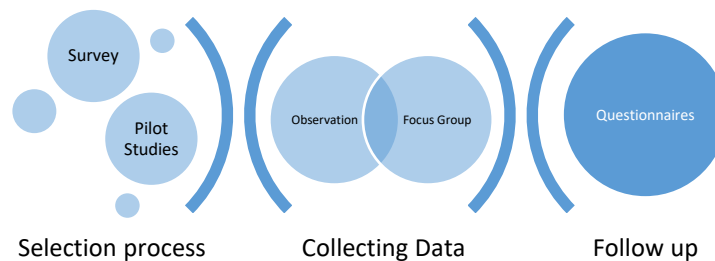


Figure 4 - 8 Initial plan process illustrated Source: Author

A pilot study is carried out in mind of testing the overall effectiveness of the methods adapted from other disciplines. Some methods are not commonly used to feed the purpose of this particular type of research, such as focus groups (Student Designer Engagement Map); however, the researcher's background and experience added more layers to the design of the methods, thereby making those methods spatial-based as detailed in the Methods earlier in this Chapter.

The methods were chosen to find answers to the main aim and objectives, as follows in Table 2:

Objective	Method	Remarks
To explore the potential design studios, which the researcher will thoroughly study. This will be based on an initial investigation of each factor (pedagogy, users and spatial attributes) that shape each of the design studios.	Survey	Three levels for investigation by the survey (Pedagogy, Users, Spatial design). This method will feed into the selection process of the design studios in which is the study is taking place.
To clarify the link between these factors and their contribution in terms of making the design studio reputation.	Ethnography (Annotated Plan) Observation	Describing the phenomena of the design studio (the link of all factors).
To help achieve understanding as to the relationship between users' perceptions and the physical attributes of the design studio. And, thus, why certain behaviours are identified at design studios.	Focus Group (Student Designer Engagement Map) Follow up questionnaire	Collecting the data from the users, by allowing them to tell their stories within the design studio, and sharing their experiences. The Follow up will focus on validating the researcher primary analysis.

Table 2 Assigning objectives to methods

Notably, during the process of doing this, a project with one of the library staff at the University of Sheffield was upcoming, which involved researching public studio. This required a change in the plan, to broaden the research question to include the public design studio. The idea of the investigation of the importance of the public design studio will be hand on hand with the investigation of the learning design studio. The aim of this shift was to generate more perceptions and record experiences about the 'temporary use' of the space, which then will be somehow compared with the findings of the learning design studio. The other potential the public design studio will benefit this research was the ability of changing an experimenting physical aspects in the space, as the studio is designed and managed by the researcher. With this in mind, the IC project was initiated.

The IC project could not be executed as a result of finances coupled with the financial year, with the opening of the diamond a further consideration. The initial plan was to look at the public design studio, and how the students from non-design background could potentially use the space created. The question is raised as to how they could adapt the space and use it differently according to their tasks and activities than those students who are used to working in such an environment, as well as whether the space could benefit non-design students who are using it on a temporary basis. Moreover, there is also the consideration as to whether or not the hypothesis of the research team of this project regarding this space being popular between students is true.

The observation and mapping did not happen as the space could not be executed. The plan therefore needed to be changed to focus on the learning design studio instead. This project could be looked into in a future research. Nonetheless, the process of designing and researching about public studios, the visit to the Greenwich University, and the other case studies found and read on the designing studio for collaboration have set the scope for the next steps in the research.

The plan when executed have been detailed in this diagram (Figure 4-9).

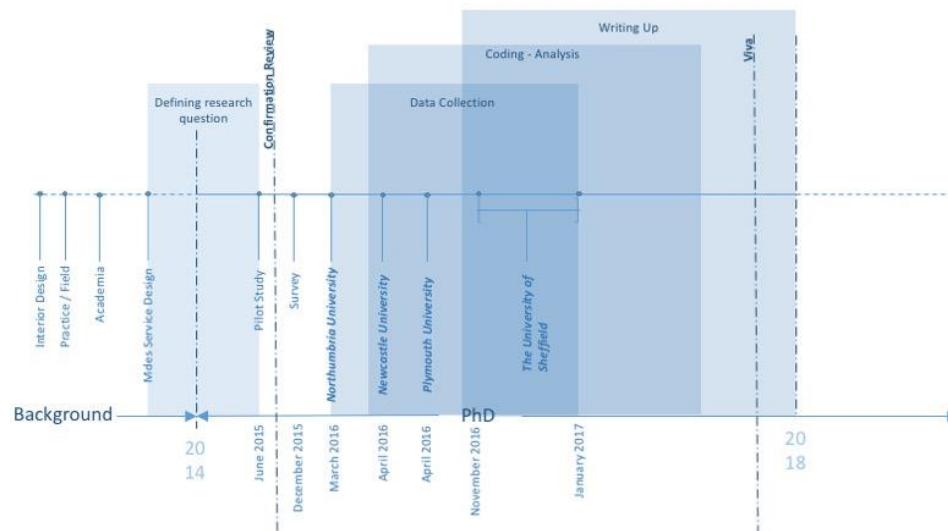


Figure 4 - 9 The timeline/process of the research. Source: Author

4.8 Ethics

It is worth stating that the Research Ethics Committee at the University for Sheffield has granted its approval to conduct the research work including the observation, interviews, mapping and focus group discussion. The letter of approval and the information sheets and the consent forms then were handed on to the participants, and have been kept with the researcher. A copy of the approval letter and the consent forms can be found in the Appendix 3.

4.9 Survey

4.9.1 Introduction

The survey, as a research method tool, has the capacity to reach a vast number of people with the aim of garnering their contribution. It is defined as ‘the collection of information from a sample of individuals through their responses to questions’ (Check & Schutt, 2011:160). Survey especially quantitative are used to gather the responses of many people, where in the qualitative research, the information gathered by survey is open-ended and describes human behaviours (Ponto, 2015).

4.9.2 The Research Context

The survey tool, to be implemented in the specific context of this research, has been applied as an exploratory means of selecting studios for the purpose of performing case studies. This particular survey aimed at investigating the Design studios of the Schools of Architecture within the UK. In the survey, the researcher considered variations between different variables on the grounds that, later on, this should inform the next stage of the PhD study.

There are many questions related to the big research question, and so this survey will help to steer the researcher into choosing the most suitable spaces for the case studies. These questions are related to the definition of a studio space, i.e. What are the components that makes a studio? Does the studio space stand alone? What are the functions performed within the actual parameters of the studio space? Other questions

might focus on the users of the space: How often is the space available to one group? Is the studio meant solely for these users or for sharing with other programmes?

4.9.3 Sampling

There are many universities with programmes centred on architecture and design. These vary between universities that give only undergraduates programmes, whereas offer courses all the way through to the graduates' programme and research. When it comes to defining the sample of universities to which the surveys should be sent, a decision was made between choosing those universities providing only undergraduate programmes and those extending their programs to MArch.

Weighing the pros and cons for each type of university, the decision was made to pursue those universities providing the MArch programmes. This was based on the fact that the students to be researched would be familiar with the concept of the design studio. Furthermore, they would be able to provide valuable information as to whether or not they had experienced this only within their university or with other former universities during their degrees. Moreover, in an effort to reduce what was considered to be a significant list, another decision was made to only choose those courses that were RIBA-approved, with list acquired the RIBA website. This survey was then sent via email (through Google Forms) to targeted module leaders and Schools of Architecture at the selected universities email. This narrowed the number towards 31 schools according to the latest report by RIBA, dated August 17, 2015.

4.9.4 Survey Design

There are many different factors that can make one space differ from another. In this context, the studios will differ according to the following:

- **Physical Variations:** This will investigate the limits of the studio space, whether open or defined, the furniture and equipment within the designated studio space, and the supporting spaces to the design studio, such as workshops, etc.

- Users: This variable considers the way in which the space is used by users, whether the spaces are shared with other programmes, or whether users are hot-desking. Furthermore, focus will be directed towards the tasks performed within the space.
- Pedagogy: What is the pedagogy supported within the space? What are the strategies adopted by instructors within the design studio? Do they support teamwork?

The survey was divided into four sections, each of which measures part of the design studio variables. Through the answers of the survey, there was the intention to lead onto the way in which the design studio is used and how users interact with the design studio.

The questions will be varied between multiple-choice with open-ended preference, and ratio scale questions. The selection of such types of survey question will ensure unity across the responses, which subsequently will enable the grounds for the case studies to be established.

4.9.5 Survey Questions

The questions proposed for inclusion in the survey are as follows:

1. How would you describe the MArch Studio Space?
 - Open
 - Closed
 - Defined
 - Other:
2. What equipment is available for MArch students within the limits of the design studio space?
 - Computers
 - Printers
 - Laser cutters
 - Library
 - Other:

3. What equipment is available to MArch students within the limits of the building in which the design studio space is located?
 - Computers
 - Printers
 - Laser cutters
 - Library
 - Other:
4. How would you describe the relation between the design studio and these spaces? From strong to weak
5. The tasks taking place within the design studio are
 - Modelling / prototyping
 - Drawing
 - Researching
 - Presenting
 - Other:
6. How would you describe the relationship between users and the design studio?
7. Is the studio solely for use by MArch. Students?
8. How much time is spent in the design studio?

4.9.6 Responses

Unfortunately, of the 31 universities approached, only one response was received. A number of follow-up email and calls were made to some universities; however, no responses were achieved.

The only response was given by the University of Strathclyde*, Department of Architecture. The responses regarding the physical appearance of the design studio were concerned with describing the space of the MArch studio as open in an enclosed space. The studio was not dedicated to the MArch students only, but rather shared with others from different disciplines. The equipment available to the MArch students within the

limits of the design studio space included Promethean boards (for presentations), laptops and drawing tables.

The equipment available to the MArch students within the limits of the building in which the design studio space is located included IT facilities, timber and metal shops, and Cadcam, which is shared with the other departments.

The activities taking place within the design studio were stated as modelling, prototyping, researching, reviewing and group discussions. The students spent in the design studio an average of around 18 hours per week on an ongoing project timeframe.

The curriculum of the MArch design studio was outlined as almost 50% teamwork assignments. Furthermore, although the students are not involved in designing the curriculum, nonetheless, 'they have freedom in identifying the topic, context, user population the project will address, modes of work (whether individual or group)'.

The respondents referred to the open question at the end by stating, 'I think it is important to discuss furniture arrangement as this has a significant impact on the way in which learning takes place and how the communication process is undertaken. It is also important to refer to the number of tutors and number of students in a studio space. These are determining factors for your study'.

4.9.7 Reflection

Based on the failure of the survey, the decision was made to adopt an alternative approach to the case studies of the design studios. The word of mouth and the snowballing methods were used to grant permissions to conduct the research. The researcher decided to go beyond the MArch programmes, thus there has been a mixture of first year studios, MArch studios and MAAD studio.

4.10 Pilot Study

The first part of the research was centred on testing a method recently and exclusively used in business. A Student Designer Engagement Map which is a form of blueprint and

a storyboard that maps the journey of users through the service in question. This method has been adapted and extra layer of investigation has been added. This layer is the active physical zone (refer to the creative methods mentioned earlier).

In this stage, an invitation sent to colleagues and Masters Degree students at the University of Sheffield to participate in filling the Student Designer Engagement Map (Figure 4-10) to try the effectiveness of the method and whether the generated data are in line with the investigation in the process.

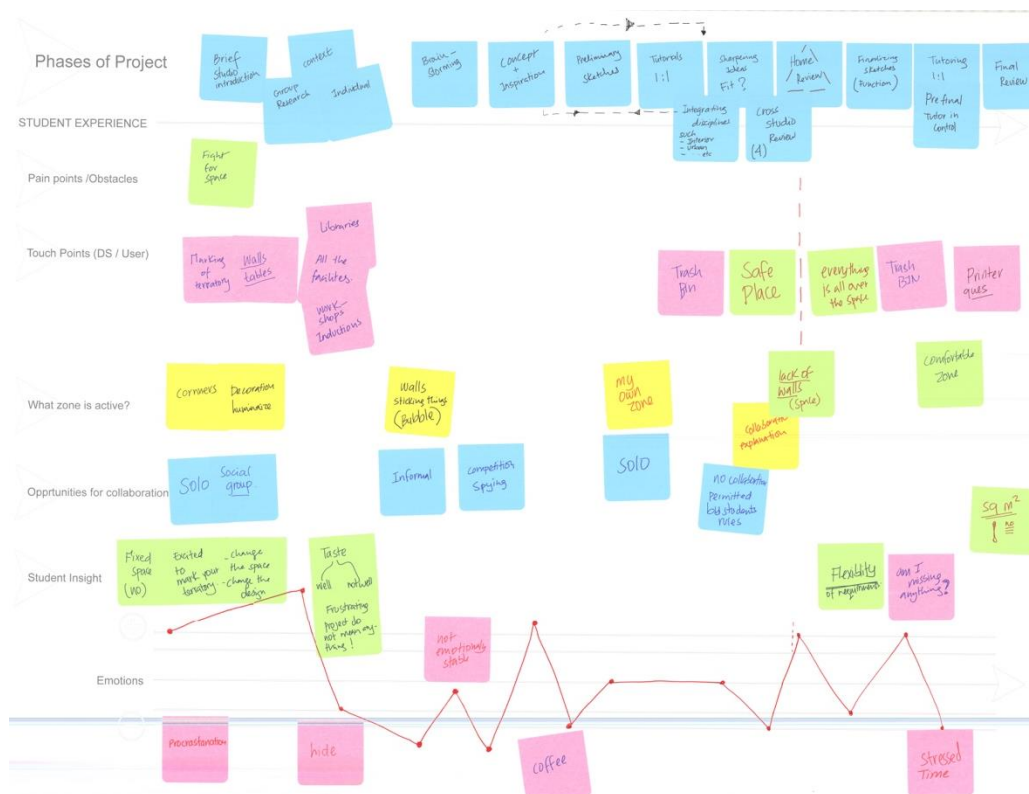


Figure 4 - 10 A Student Designer Engagement Map filled by PhD and Master students at the University of Sheffield at Pilot study. Source: Author

This pilot study has generated findings and themes that the researcher found vital and beneficial to proceed with the method, and during this method, the conversations and the discussion while filling the Student Designer Engagement Map were as valued as the map itself, which then gave the researcher the idea of recording these conversations and consider it as part of the data gathered. With this pilot study done in the University of Sheffield, where the researcher and this research is based on, the researcher took the

decision to return to the University of Sheffield to conduct an in-depth investigation after conducting the other case studies at the Universities to which the researcher had access.

4.11 Data Purposes

The use of varied methods was centred on ensuring all aspects of the research were covered. Some methods were centred on exploring and understanding, whereas others were explanatory. Each of these might change the purpose of the data according to the time and phase of the research. Following each case study, a reflection on the method used and why they were successful or not will also be reflected upon.

4.12 Conclusion

In this chapter, discussion has revolved around the researcher's position in terms of this research. The qualitative approach has been selected through consideration to qualitative, innovative methods that suitably generate insights and in-depth investigation, as required when answering the research question and the research aims and objectives. The reason behind choosing these methods as well is the background of the researcher, which makes working with such methods more efficient and effective, especially relating to a familiar process. The adaptation of a familiar proven to work method to create a new Student Designer Engagement Map, which then used in line with other methods discussed in this chapter to create the research framework.

The methods constructed for this study have been formulated from visual, emotional and ethnographic research. These qualitative methods were seen to fall under the bigger research tactic of a case study.

This Framework has been tested and applied to each of the case studies that have been selected. There are four case studies that will take a place in the coming chapters, taken place at four universities, Northumbria University, The University of Newcastle, Plymouth University and The University of Sheffield in chapters 5–8 consecutively.

The background of the page is a photograph of a modern building's exterior, featuring a light-colored concrete wall and a set of stairs with a dark metal handrail. Overlaid on this photograph are several geometric shapes: a large teal rectangle on the left, a white rectangle on the right, and a thin, light blue rectangular frame that encloses the white rectangle. The word "Five" is printed in a teal serif font on the white rectangle.

Five

CHAPTER 5: NORTHUMBRIA UNIVERSITY CASE STUDY³

5.1 University Profile and Existing Design Studios

The University of Northumbria is one of two universities in Newcastle. It has two main campuses in Newcastle, as well as many in London and around the world. City Campus West, specifically Ellison Building (Figure 5-1), is the home to the School of the Built and Natural environment and the Architecture and Built environment. The Architectural studios, which are the main teaching and learning spaces, are open to all year groups so as to encourage peer learning (*'Architecture and Built Environment at Northumbria University,' n.d.*); these are available from 8:00 am through to 10:00 pm unsupervised. There are many facilities complementing the main teaching and learning spaces (studios). These spaces include The Zone, which is open every day for twenty-four hours, and the Modelling workshop and rapid prototyping room.



Figure 5 - 1 The Ellison Building at the University of Northumbria. Source: Author

Upon first visiting the University of Northumbria, the first impression of the Ellison building is that it is well-structured; the blocks of the building forming edges to a public court/path with sculptures. From inside, the building is like a maze; consisting of blocks,

³ This Case study will be published in the proceedings of The impact by designing conference that took place at KU Leuven Brussels in April 2017 (Appendix 7).

which are interconnected through different levels. To travel from one block to another, however, requires a lot of effort and attention so as to find routes that are minimal. Importantly, there was no visible reception for enquiries.

The existing Design Studio of Year 1 (Figure 5-2) is located on the edge of the ground floor, which makes it accessible from two different avenues: the design studio entrance is not far from a fire door exit that has been used to enter the building; and the main entrance, which is relatively far and not as straightforward as the fire exit door. The studio is shared between first-year Architecture students and Interior Design Students. The Masters design studio is a different setting to that of the Year 1 design studio. In the first instance, it looks like an office environment.

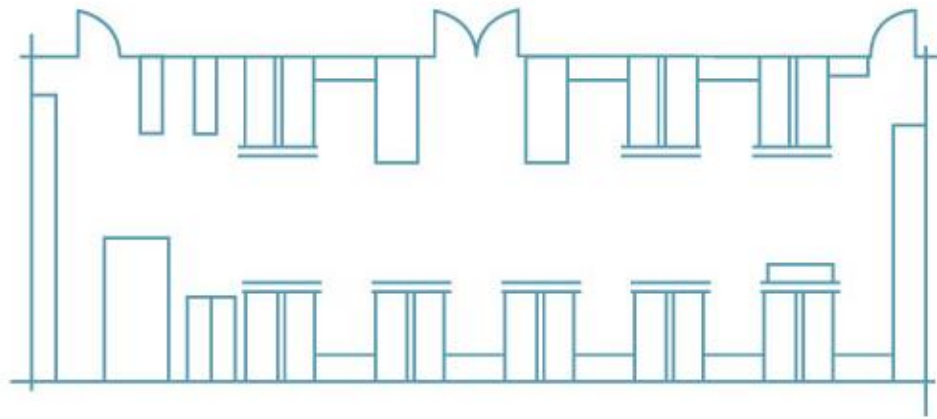


Figure 5 - 2 The first year design studio plan at the Northumbria University. Source: Author

The curriculum of the Northumbria University claims to equip the students with the ability to come up with ‘imaginative solutions to authentic problems’, that can respond to architecture from different ‘social, cultural, aesthetic and theoretical positions’. The students respond to a brief at the beginning of their studies, where at later stages students encouraged to develop their own briefs (RIBA, 2014). The students are engaged in Live projects where they collaborate with industry, covering aspects of architectural design from historical and theoretical, to practice and management, they also introduced to environmental systems integration and sustainable designs (‘Architecture and Built Environment at Northumbria University,’ n.d.).

5.2 The Study

Based on a pilot study carried out at the University of Sheffield, this was the first university of four to be taken as a case study. The study was initially planned to look at the Masters Design Studios and Masters' students. The reason for this was owing to the fact that they have experienced many diverse design spaces, and different teaching and learning approaches, and have formed their own knowledge of what makes a design studio culture. After observing the Masters design studio, it did not look like the students were working in a normal design studio; rather, it was more of a workspace environment, predominantly due to submissions and timing, with the researcher's observations carried out just before Easter break. The students were focused on their screens and were isolated from their colleagues though the use of headphones. On the other hand, the researcher was offered the opportunity to look into the first-year studio, which was the opposite to what was observed amongst the Masters students. In this case, the studio was very busy, with people drawing, sketching, modelling and having conversation with other students.

In conclusion, the observations and spatial mapping were carried out for both studios; the focus group was done in the first-year studio as the Masters studio was very busy working towards a submission.

5.3 The Study Design and Methods

The research question is 'How do the physical characteristics of the Design Studio influence the behaviours of studio users (in this case, the students), and in what ways are the characteristics relevant to creative collaborative learning?'

5.4 Data

Four data sources have contributed to this study. With focus on collecting data so as to inform the three aspects of the main research, these aspects are space, students' experiences, and the teaching and learning process. Through space and spatial features, the data were generated from visits, photography, and students generating drawings of

their illustrations of the Design Studio. Students' experiences were recorded with the use of a focus group with Student Designer Engagement Map method (Figure 5-3) refer to Chapter 4.

The students that participated in the focus group were recruited by email, a group of 7 students of the first year design studio has contributed to this case study in the context of their own design studio. The rest of the students in the design studio were present and contributed to some of the conversation occasionally as they were having tutorials with their tutors.

The Student Designer Engagement Map generated with the students through the focus group session was tape-recorded and transcribed and initially themed, with the actual map filled in and a photo of it attached. The transcription of the session was done without identification of the participants, as the focus was on the Map generated and the group that participated in filling the map. The conversation was to clarify the decision of what to include in the map and the process of taking such a decision.

Observations were hand-noted (drawing) and photos were taken, whilst the illustrations produced by students were scanned and kept in a digital format. The data were organised and coded using both manual and software approaches (the latter of which was through NVivo, a program used for qualitative data). The data analysis process was completed both during and following the collection of data. The categories that emerged from the data were relevant to the literature visited and reviewed, with more themes appearing whilst performing the thematic analysis. Thematic analysis was the approach of categorising and grouping the data. The confidentiality of participants was maintained. Informed consent was taken from the students according to the ethics committee at the University of Sheffield.

Project Phase



Figure 5 - 3 The Student Designer Map generated with the first year students at the University of Northumbria.
Source: Author

5.5 Findings

Two studios at one university were found to display two significant differences on many different levels, such as in terms of the atmosphere of the studio, the level of energy, the activities and curriculum of the users, as well as the physical characteristics of the studio (Figures 5-4,5-5). Notably, although, this is not a comparison study, but merely an investigation in the variation of studio variables that can alter the physical appearance of a space and its culture. The analysis of these findings can be found in Chapter 9, after disseminating the findings of the other case studies in chapter 6,7 and 8.



Figure 5 - 4 Office like atmosphere at the fifth year design studio at the University of Northumbria. Source: Author



Figure 5 - 5 The First year design studio at the University of Northumbria. Source: Author

5.5.1 Collaboration:

Students have identified collaboration as a notion of the design studio, with one type of collaboration recognised in the conversation that of Instructed Collaboration. This type of collaboration involves the tutors asking teams of student to work towards a common

goal. The main insight in regards this collaboration came from one of the students, who stated, ‘Team tasks make me more productive’ (Design studio 1 Focus Group, Northumbria University, 2016). However, in the same context, the students who acknowledged collaboration as a term only emphasised this with their own view of the way the space for collaboration would look. Many students, through their illustrations, suggested different types of table (Figure 5-6), with one of the students suggesting something temporary and that can be used for times when collaboration is needed: ‘A table for collaboration that can be folded away’ (Design studio 1 Focus Group, Northumbria University, 2016). Again, this relates to the notion of instructed collaboration as this was tied with the presence of the tutor.

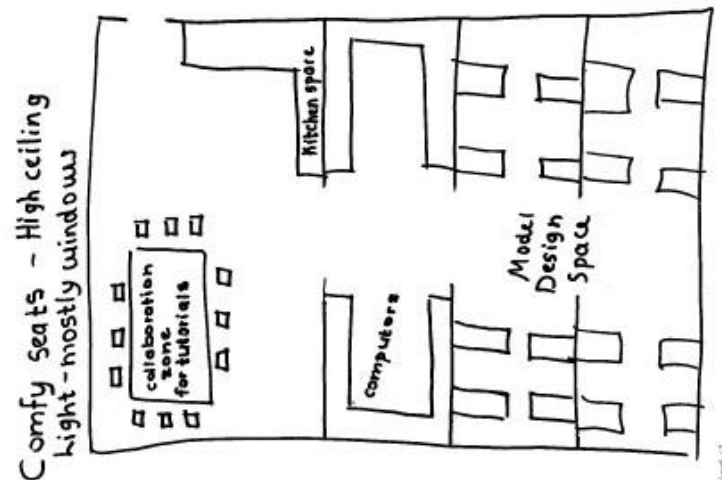


Figure 5 - 6 A students' drawing showing a large table with collaboration and tutorial written in the middle. Source: Author

5.5.2 Themes Related to Physical Characteristics:

From the data, themes related to the design of the design studio and adjacent spaces were identified. These themes revolved around the interaction between the physical space and users; in this particular case study, these themes included movement, complementary spaces, furniture and spatial features, and environmental control aspects.

Movement:

The studio space was locked and could be accessed by swiping the student's ID (Figure 5-7); however, the students have felt very unsure about it. Many claimed that the studio tends to have people that go around, meaning it tends to be crowded and noisy, with headphones then becoming an essential part of studio behaviour. The fact that the studio is not open 24/7 forced the students to have their own mechanism of evacuating the studio and heading towards The Zone after the set time. A volunteer would stop the design studio door from closing until everyone was out so that they would not have to swipe in and out each time to head towards The Zone. Moreover, because it is a shared studio and they only have it every fourth day and lack storage spaces, they have to take their models and draw with them, which makes it more difficult to move in and out of the design studio and the university overall.



Figure 5 - 7 The Door to the first year design studio which needs to be kept open as it is locked and needs ID to be open, especially the need to keep it open at the end of the day, so everyone can move to other open spaces to continue their work. University of Northumbria. Source: Author

Complementary Spaces (Functions):

Throughout the methods used to garner insight from the students, many suggested that the studio lacks the ability to accommodate various facilities that are very important to the process of design—or, more importantly, to the users of the space. Research stations consist of computers and a small reference library.

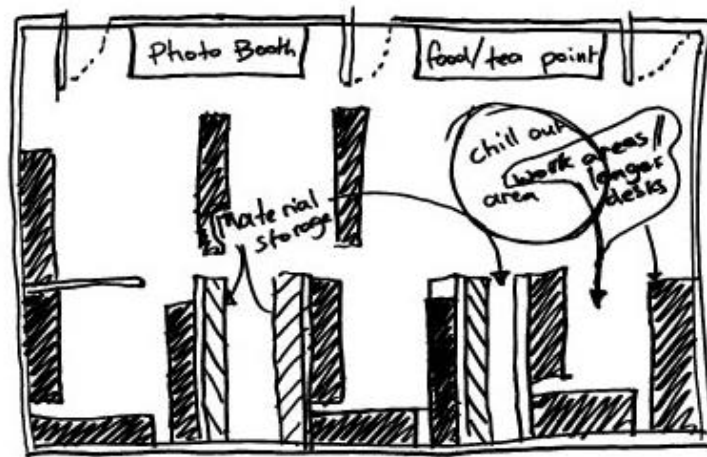


Figure 5 - 8 Students would like to have a photography booth and Food bar within the design studio space. Source: Author

Many of the data collected suggested the need for closed proximity cafés and vending machines, whilst others stated that a kitchen or a food station would be needed within the proximity of the design studio (Figure 5-8). However, one of the students thought being away from food sources was actually an opportunity to clear his mind: ‘Going to get food with others to give your brain a break’ (Design studio 1 Focus Group, Northumbria University, 2016). The other function highlighted as necessary within the boundaries of a design studio or within close proximity was printing facilities. Suggestions for a modelling station and photo booth were constantly mentioned in the data.

Furniture and Spatial Features:

The students identified zones within their drawings and illustrations of design studios; these zones consisted of a central collaborating area, a kitchen area or coffee/tea point facilities, cubicles partitioned as working and modelling spaces, printing, storage spaces, and photograph-taking spaces. They also suggested relaxing zones and brainstorming comfortable seats and areas. The word ‘comfortable’ was repeated in the data and used to describe furniture and areas. Another common term was ‘power’, with the students

seeking out sockets and electricity points where they could plug in their electrical items. Their preference for space tended to focus on walls with sockets; that is how they choose their location at the beginning of the year, although some suggested ‘people’ as the main factor when choosing their location at the beginning of the year, but then they tended to relocate for sockets. The space was lacking personal storage or material storage. In actual fact, the students lack space to work due to the accumulated previous project models and drawings from either the previous year or previous projects. Nonetheless, there was no intension of moving them in order to utilise the space. Some of these models even blocked their view of outside. Where in the design studio itself, there was a storage space but it was not intended for the use of the students (Figure 5-9).



Figure 5 - 9 The provision of a storage space but not to be used by students at the University of Northumbria. Source: Author

Environmental Control Aspects:

The double-height ceiling and the use of inadequate materials made the studio echo, meaning, during tutorial sessions, some instructors and students would find it very difficult to hear or concentrate due to the limited space, poor acoustics, and lack of comfortable seats, which meant some of the tutors were required to hold their tutorials in The Zone. Most have emphasised radiators, acoustics and lighting in their illustrations of part their design for a design studio. Natural lighting was the reason behind asking for larger windows. Although the studio space was not lacking bigger windows or artificial

lighting, it seems that the materials blocking the edges of the windows made it very difficult to benefit from the natural light. Furthermore, the double-height ceilings and the types of florescent lighting used were not enough for the beam to illuminate the whole space.

The Social Aspect of the Design Studio:

The students referred to a broad spectrum of emotions they have experienced within the time spent inside the design studio. Most of these emotions were associated with the phase of their study and their own progress, which is applicable to most learning and teaching spaces. There is another layer to these emotions, however, which is caused by the fact that students sit at the space for a long time, which gives them a sense of being part of a community. This caused various social interactions between students. The feeling of peer pressure was seen to be at its peak when in the design studio. Students tended to go and work at certain intervals to lessen the pressure and to increase motivation to work, even though they would be preventing other interaction as a result of headphone and computer use. The notion of the feeling of safety stemming from being around other students made the progress and develop more.

There were lots of emotions being experienced by the students in the design studio, mainly those associated with the stages of design; however, other emotions were associated with the mental state of the students and their own restrains, limits and subjects, which confined their emotions within the design studio.

The Zone:

The Zone is an open space serving students' needs and works 24/7. It is designed for individual and group work, with many using it during the day and also out-of-hours. The design of this space serves most of the activities happening within the day of a student of the Architecture and Build environment (Figure 5-10). This space is very popular between students, with many tending to visit, especially after the usual design studio

hours. Some of the tutors tended to give their tutorials in this space and were also running away from the terrible acoustics of the design studios.



Figure 5 - 10 The Zone at the University of Northumbria. Source: Author

5.6 Conclusion

Although many of the themes seen to have emerged from the data have shown what is important in regards a design studio, from students' perspective, this actual case of the University of Northumbria was particularly interesting. The building encompasses design studios and The Zone, which offers comfortable seating printers, computer suites and technical drawing facilities, modelling, and 24/7 opening hours, which can be accessed by only the students of the Architecture and Build environment. Nonetheless, the students demanded all of these features in their own design studio.

The requests for large windows was one of the findings in the illustrations of the students, with most of them wanting a view of green space. Furthermore, a proper acoustic design for studios was mentioned, which relates to the fact that the students were experiencing a difficult time concentrating and working properly, with them stating

that this why they use headphones. In The Zone, however, where the space is not an issue, the students distract themselves with headphones.

Gathering the ideas of the students and the findings from the data would make more sense when in an illustration form. These illustrations have been analysed and used as a design brief in order to come up with a one drawing that represents the findings of the data. First, the activities and zones needing to be in the collective design studio were identified. These were then centralised into a collaborative zone, individual private working stations, storage spaces, relaxed seats, kitchen facilities and workshop area. These were placed on a zoning diagram, with attention paid to the adjacency of the zones and to accessibility, centrality and places requiring a view, according to the students' illustrations. The weight of use in the zones was identified in order to accommodate the most units for such an activity to take place and to cater to as many students as possible.

In terms of the layout of the design studios, the students drew mainly rectangles with more than one opening in each design studio. The workstations were gathered into small groups (cubical) but with an individual desk for each student. There were lots of openings with views to the outside. A central focused meeting table was presents in most of the drawings, labelled as either a collaborative space or a collaborative group working area. As a result, a sketch design of openings, furniture, and partitions was done (Figure 5-11).

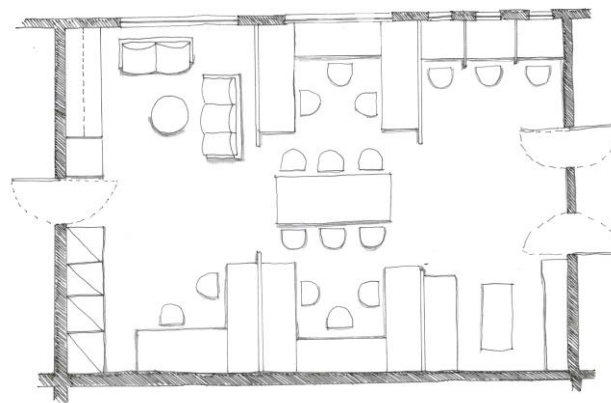


Figure 5 - 11 The collective design studio done from the findings of the case study of the University of Northumbria. Source: Author

5.7 Reflection

Reflecting on the data and their findings, attention will first be directed towards the design process stages, with each stage drawing certain spatial needs. The students were filling the Students Designer Engagement Map, and were working chronologically with the stage of the project, the activities they were to perform, and their emotions at that certain stage or phase of the design. They would then start to associate this with space and spatial needs, which formed most of the pain points, and touch points where identified. This could be how the Students Designer Engagement Map was structured, or merely because their emotions were associated with how the space was not working the way they wanted it to work, therefore echoing ‘frustration’.

Due to the fact that the students had been happy with The Zone, the collective design studio was completed in a similar way. In terms of differences, however, The Zone lacks layers of familiarity, ownership and privacy. The familiarity of the spatial context of the place, the people sharing the same project, tasks and emotions, even if minimal interactions were demonstrated in times of submissions and reviews, and the fact that they were doing what they were doing all helped to lighten the burden in terms of peer pressure; there was the notion of ‘we are in the same boat’ (Design studio 1 Focus Group, Northumbria University, 2016). Ownership, which notably adopted the form of the privilege to work from the same desk, involved separating the workplace by having an actual space to store work and not have to carry it around. The students seemed to look for a place they could inhabit and make their own; the notion of a safe place where they could perform their tasks without being judged by others. The safe place is very familiar in terms of its rules because the rules were put in place by the students themselves. The safe place is not temporary and ends by the end of a studio day ‘looking at Plymouth case study as an example’.

When the students were asked to draw their idea of the studio, many specified 24/7 access hours; this draws to the fact that the window available by the university is not necessarily suited to all students. Some of them prefer working in the mornings around other students and staff, whereas other preferred to work outside of the outlined hours. The researcher considered that creativity could not be framed to a defined window, and

that this window shifts from one person to another depending on their ways of thinking, background and even personal preferences. Nonetheless, it is understandable if the university cannot cater to such a broad spectrum of preferences. Importantly, this comes with the huge inflation in fees that the students are paying; the university could be more sensitive to providing a basic form of settlement for the students, which would eradicate most of the students' insecurities regarding their working space.

5.8 Reflection on the Methods of Northumbria University

As the study have been designed, after each case study, a quick reflection on what works and what did not in terms of methods would be done. Reflecting on the methods used at the two design studios at Northumbria University, the first year and the fifth year.

Starting with first year, the investigation happened on two different days, visiting the space twice, one on the main teaching day, where the focus group took place, the users/space observation. On the second day, the space was photographed without the users. The space observation while the students were within the space and the tutorials are going on was not successful in the case of Northumbria, as the state of the studio space, in terms of acoustics, have impacted the attendance of the tutors and the students, and as mentioned before, it did happen at other spaces on the campus, such as The Zone.

The focus group was very successful in terms of the outcome, the fact that the focus group ran over the time allocated for it, proved its effectivity in capturing and listening to students concerns and comments.

Comparing the outcome of the still photography were students weren't in space in the case of the first year, and between the case of the fifth year where the students were in the space have gave almost the same conclusions and themes. The space could be read and interpreted without the students being there, in fact, looking at an empty space showed the traces and the footprint of how it has been used. Yet, the main aim was seeing the interaction of the space. This has been kept in mind for the coming study to be tested again.

Notrhumbria Universtiy

Research Question

"How do the physical characteristics of the Design Studio influence the behaviours of students?"

"How is ti relevant to creative collaborative learning?"

Data Analysis Based on:

- ✦ Space
- ✦ Students' Experiences
- ✦ Teaching Process
- ✦ Learning Process

Outside: Well Structured

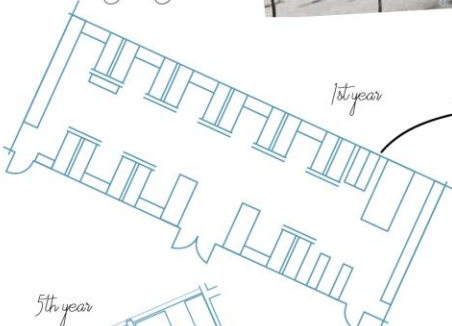
Inside: Like a Maze

effort

attention



Studio Sketches

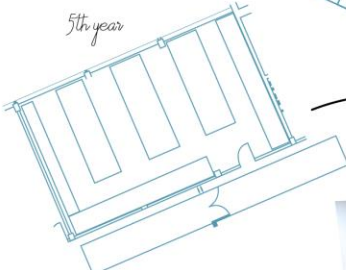


1st year



Access to Student ID

Not (Jan 21/7)



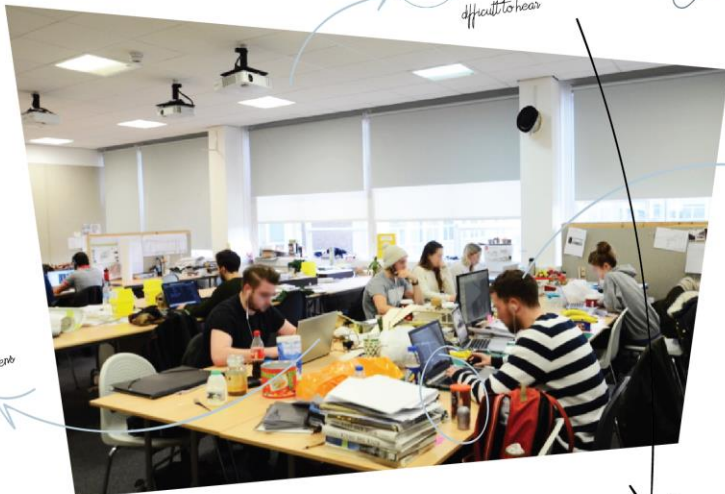
5th year



heading towards The Zone after the lecture

different in atmosphere level of energy activities

isolated by their reasons



difficult to hear

"We are in the same boat"

headphones are an essential part of studio behaviour



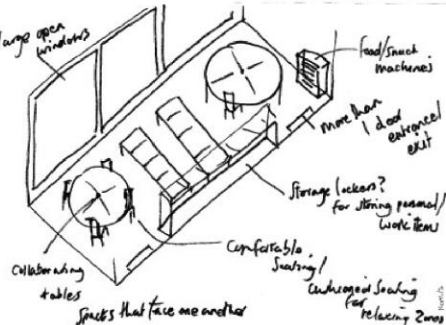
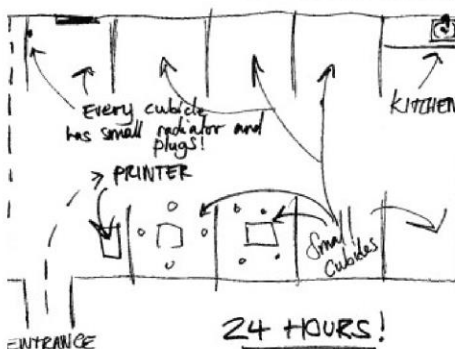
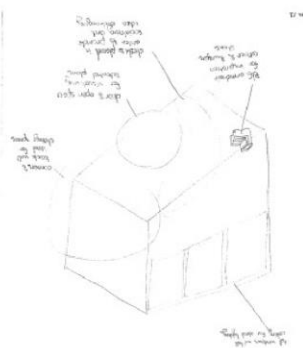
limited space and storage

Some of the tutors tended to give their tutorials in this space



What makes The Zone the go-to place to go to by the students

Students Sketches



The image features an abstract geometric design. A large, solid teal shape, resembling a parallelogram, is positioned on the left side. To its right, a white parallelogram is partially visible, overlapping the teal one. These shapes are set against a background of light gray concrete, which shows horizontal lines and a dark metal railing running diagonally across the frame. The word "Six" is printed in a teal serif font on the white shape.

Six

CHAPTER 6: THE UNIVERSITY OF NEWCASTLE CASE STUDY

6.1 University Profile and Existing Design Studios

The city of Newcastle upon Tyne is located in the North East of England at the border with Scotland. It is a historical city named after a Roman castle built in the centre of the ancient Kingdom of Northumbria (“Architecture, Planning & Landscape - Architecture, Planning & Landscape - Newcastle University,” n.d.).

‘The University can trace its origins to the School of Medicine and Surgery, established in 1834; and Armstrong College, founded in 1871 for the teaching of physical sciences.’

As noted on the university website:

These two colleges formed one division of the federal University of Durham. The Durham Colleges formed the other division. The Newcastle Colleges merged to form King's College in 1937. In 1963, when the federal University was dissolved, King's College became the University of Newcastle upon Tyne. The University changed its trading name to Newcastle University in 2006. The name University of Newcastle upon Tyne is still used in the most official of contexts, including on degree parchments.

Newcastle University is an international university with more than one campus around the UK. They are international with campuses in Malaysia and Singapore (“Architecture, Planning & Landscape - Architecture, Planning & Landscape - Newcastle University,” n.d.). The city campus is located in the Western part of the city centre of Newcastle, adjacent to the other university in the city, which is Northumbria University. Both universities are spread out through the city of Newcastle City Centre.

The facilities of the School of Architecture, Planning and Landscape are located in the oldest Edwardian building at the University within the Quadrangle (Figure 6-1). The Quadrangle is the oldest part of the university and has been converted to become a memorial garden for the members of the university who have given their lives at the two world wars. Access to the school is through the busy route from the city centre to the

university, where the school is centrally located within the campus. Moreover, the school is located within a good distance of all facilities provided by the university.



Figure 6 - 1 The Entrance of the Architecture school at the University of Newcastle. Source: ("Architecture, Planning & Landscape - Architecture, Planning & Landscape - Newcastle University," n.d.)

Architecture students have 24/7 access to the building; at later stages of their education, they have their own studios and spaces at all times. There are many facilities available for the use of the students and staff, including printing facilities, workshops, library, and café with vending machines.

The façade of the Edwardian building where the school is located consists of large windows in a brick wall, looking over a garden. During the researcher's first visit to the school, a route was taken through the staircase, leading to the reception of the school. The researcher was accompanied as there wasn't an easy way of finding signage to lead the way. The first-year studios were located on the ground floor. The fifth-year studios could be found located on the fourth floor. Staff offices were scattered on the upper floors.

The curriculum of the architecture at the University of Newcastle is focused on a design based projects which rely on manual and computer-aided, model making outcomes, the university claims to help students finding their own design style and to help them

acquire the knowledge to understand the consequences of their decisions on the bigger picture of the design. With ‘hands-on approaches’ towards studying architecture, the students work on experiments and installation through live projects that are focused on community (‘Architecture, Planning & Landscape - Architecture, Planning & Landscape—Newcastle University,’ n.d.).

The University refer to itself as ‘world-class civic university’, the students enter the program that helps them to exit it with a ‘tailored portfolio’ that helps them towards the practice they are interested in. With themed studios that are chosen by the students according to their preference, the studios are referred to by studios as the university ‘reject the master-pupil model of architecture’. The university also provide undergraduate dissertation which helps the students investigate and contribute to their project (RIBA, 2017a).

6.2 The Study

At the University of Newcastle, the researcher was given access to the first- and the fifth-year students and coordinators. With the first-year, access was enabled in order to analyse the studio without the students, as the visit took place during a site visit for students. The studio was photographed and analysed in the students’ absence, with the researcher given an extensive interview with the first-year coordinator. Thankfully rearranged, a meeting was arranged at a later date with the students. Unfortunately, however, only one student showed up to the meeting to complete the Student Designer Engagement Map.

In the case of the fifth-year, the researcher was given the opportunity to visit and observe the studio in action, during tutorial time. The students gave their time to complete a Student Designer Engagement Map (Figure 6-2) and to draw their own studios. The number of participants in the case of University of Newcastle were 10 students from the Fifth year studio. They have been sent an email by their tutor with the information sheet and the consent was taken on the day.

Project Phase



Figure 6 - 2 The Student Designer Engagement Map filled at the University Of Newcastle fifth year design studio.
Source: Author

6.3 Findings

When considering the studios of the University of Newcastle, the same scenario took place as in the case of Northumbria University: differences were identified at various levels, according to the spatial organisation and use of the studios. The analysis of both studios provides different areas of focus. In this case, there was another perspective added to the variables of the investigation, namely the tutors' perspective of the space (Refer to Appendix 6 for the transcribed interview with the first year tutor), curriculum, and policies governing the entire experience.

Focus was not concerned with comparing either universities or levels of studio; this provided an investigation into the way in which the studio and users of the studio were shaped by all of the factors making the design studio.

The findings has been discussed and analysed in Chapter 9 alongside the other case studies.

6.3.1 Collaboration

There is a form of collaborative project at the beginning of the year that took place across the entire School of Architecture, with all students from all the levels of the courses participating in the project. It is a collaborative approach that is instructor-led for the students.

There were up to twelve different projects, and in each project there were students from all years, even Masters students, who were all involved in the collaborative project or, as described by the instructor Martin Beattie, 'a social event'. For each student from each year, this would mean something different. As seen from the perspective of a first-year student, it provided an introduction to the school and the life of architecture study, and the profession as a whole.

In regards the instructor-led collaborative tasks, there were many forms of collaborative opportunity provided by the instructors. During tutorials and group teaching, they were also asked to work in groups for projects. The instructor of the first year stated the following:

'There's the week by week tutorial things that we do; obviously teaching in groups so that they're seeing other students' work all the time, constantly mixing the groups around so that they're seeing different students every week. They do a group project just before they start the housing project, there's a housing precedent project they do in groups, they're mixed ability groups, we make them mixed ability groups just within the first year, so they get to work together there.'

There are many attempts made by the school in regards incorporating collaboration within the curriculum:

'So I guess were trying to foster that process of them learning from each other as much as we can really. In lots of different ways.' (Martin Beattie, Newcastle University, 2016)

The students identified another form of collaboration amongst the students; they mentioned many forms of collaboration. The definition of collaboration, after mentioning this in the focus group, changed after asking the students to explain their

views further. One of the students considered collaboration as involving talking with one another and helping in brainstorming. When answering the question about when collaboration takes place, he stated, ‘When I’m designing, I like to be here (studio) so I can talk to people, see what they’re doing’ (Design studio 5 Focus Group, Newcastle University, 2016).

Ways of collaboration, from students’ perspectives, occur with an invitation from other students, either by inviting others to their desks and showing them their projects, carrying their own laptops and presenting to other students to seek out ways to solve problems, or otherwise pinning the project up on the wall and waiting for feedback. Although this is a way to brainstorm, in the researcher’s opinion, the students’ definition of collaboration was inclusive of the term ‘brainstorming’.

Collaboration is also associated with the time or the phase of the project; nonetheless, the opposite of collaboration was understood to be spying, with one of the fifth-year students stating, ‘... people were more active before reviews. But when it comes to the review time, people are working by themselves. Like solo. Things are happening, as they say it’s like spying.’ (Design studio 5 Focus Group, Newcastle University, 2016).

In terms of when collaboration happens, students agreed that this is according to their state of mind, i.e. whether collaboration takes place because one feels stuck in a particular part of the project or whether it has happened because one is stressing regarding the upcoming review (although it contradicts the ‘spying’ concept mentioned).

6.3.2 Themes Related to Physical Characteristics

The physical characteristics of the space most influenced the students’ reactions to the whole experience of the design studio, although first-year students did not contribute to the focus group. The analysis of their design studio, without their presence and the extensive interview with their course leader, would be considered how they perceive the importance of the physical characteristics of the design studio.

Starting with the themes found in the first case study, that of the Northumbria University, and building up to the findings and seeking out new themes to be presented,

themes from Northumbria were found to be related to movement, where the students struggled to move their models and things beyond the allocated studio time for them. Themes related to functions of the space, and complementary spaces where students thought important in the design studio. Other themes generated were on furniture and spatial features, and environmental control aspects. Accumulating from the first case study, looking at the themes been found within the second case study as they were centred on technical issues and teachers' own space within the design studio.

Movement

The studios at the University of Newcastle are open 24/7. Although the studios are not dedicated to only one group of students, they share studios between the two year groups, alternating the studio during the week.

Both design studios (Figure 6-3) in question were sharing the same scenario of movement within their boundaries. There is a major circulation route on one side of the studio, with several minor circulations between disks, such as a tree and small branches.

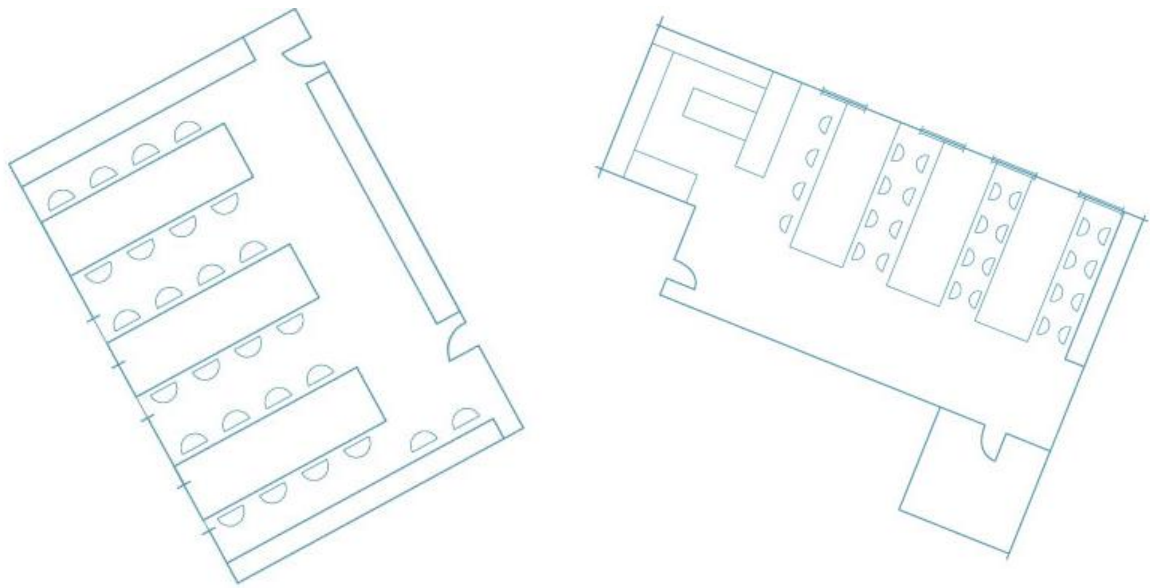


Figure 6 - 3 First year design studio (left) and fifth year design studio (right) at Newcastle University. Source: Author

The studios are the main learning spaces, but other spaces scattered across the university and the city can also be used. The proximities of the spaces to use varied. When the

course leader was asked about the spaces the first-year students use, he stated the following:

'They have to travel. Yes, they have to use their legs. The main library is that way, maybe three- or four-hundred metres. The digital studio is just in another building which is probably a hundred metres away. And the print room is in the same building at the studios but it's up two floors.' (Martin Beattie, Newcastle University, 2016)

The students had different views in terms of whether or not they would like to have everything within the design studio or maintain the situation it is right now:

'Sometimes they complain about the library. They don't complain about it as such. I think they just accept that that's what they have to do. They go to lectures as well, that are scattered, reasonably close all over the campus. They just accept that's what they have to do.' (Martin Beattie, Newcastle University, 2016).

Importantly, however, most of the students' answers varied according to the phase of their project, as well as how they would move from library to studio according, which was needed more than once in a day. In addition, it was stated that they needed to make trips to and from the café for a change of scenery and to brainstorm.

Complementary Spaces (Functions)

Many spaces, besides the design studio, were mentioned at the focus group. The first complementary space that came up was 'Blackwell', which is a stationary supply and an art shop. The students find this to be an essential part and as complementary to the design studio. They mentioned that they do frequent visits to the art shop to acquire materials for their designs and model-making.

The second space mentioned is the library for researching purposes, with both studios dedicating spaces to research, where desktop computers are installed to help with access to the web. Nonetheless, this does not rule out the role of the library and books. There is

a need for the library at many different stages of the project, with the students identifying the library when it comes to research and in the phase of detailing.

The workshop is used a lot besides the design studio, with the students acknowledging that this space is mostly used whilst at the design stage, although it is not used to produce the model completely; rather, they prepare materials in the workshop, such as the cutting card boards and other materials, and the assembly of such at the design studio.

Other complementary spaces associated with the design studio were the lecture theatre and printing room. These spaces were identified by students as frequently used.

As shown in the students' illustrations, the functions came up at the focus group, which required trips from their current design studio to be allocated within their drawn design studio. Most of the drawings encompassed areas labelled as 'coffee bar', 'coffee/tea point' and 'lunch area' (Figure 6-4).

Regarding the library, students created spaces for quiet reading, and shelves with architecture book and magazines were available, as well as a modelling space, with tables and photo booth. A photocopy and printing centre was also common across their drawings.

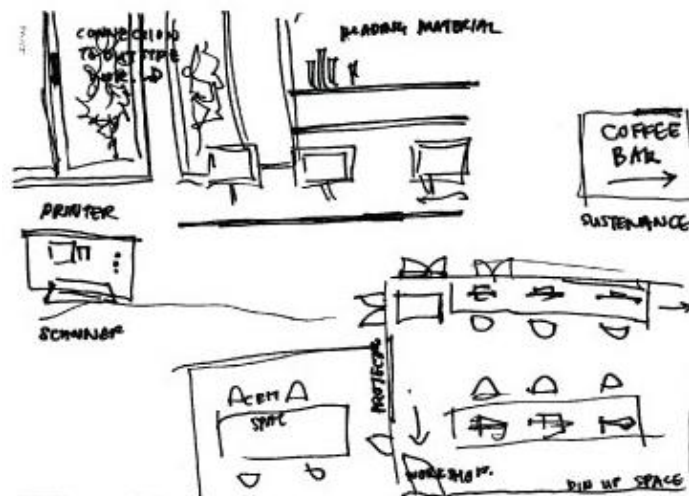


Figure 6 - 4 One of the students' drawing showing the complementary spaces needed within the design studio. Source: Author

Furniture and Spatial Features

The students, in their drawings for an optimum design studio, made mention to more-or-less the same zoning configuration. This was seen to consist of a recreational space (ping pong table), a quiet space, a social area or place to sit and talk, and ‘chill out’ spaces. These zones were identified with the standard tutorial spaces, research zone, group working spaces, and desks with desktops systems.

As a spatial feature, the students emphasised the fact that, whatever the design of the studio, it has to have a strong connection with the outside. This connection was seen in the form of a visual connection; full-size glass windows overlooking landscaped areas were detailed. One of the students drew a full-sized window and wrote ‘views to nature’. Another stressed having ‘views out’ and ‘views to the courtyard’ (Refer to Chapter 9 under Interaction with the Surroundings). A couple of the drawings highlighted having, beside the windows opening, a ‘pin-up wall’.

The students also mentioned power and use of electricity points in the spaces within the design studio, with the popularity of the plug points depending on the activity the students perform in the design studio on the day. One of the students mentioned a preference for looking for a space ‘near a plug point’.

The double-height ceiling in the design studio and the school itself led the design tutor to suggest a mezzanine layout in an effort to utilise the height of the space. Another form of layout was suggested by one of the students, involving using the amphitheatre at one side of the design studio.

The furniture suggested by the students in the design studio included a singular module of desk and chair type, or a workstation type of system. The workstations the students suggested were without any partitions. Other types of furniture detailed on the drawings included lounge-type sofas.

There was also a popularity of storage systems recognised across the students; drawings, which emphasised shelving units to store models and their need to be present and in clean and clear conditions. Other storage systems introduced included lockers for personal belongings. One more storage system related to books and book units.

Although, many of these storage systems were available in the design studios, they were used to store things from previous years (Figure 6-5).



Figure 6 - 5 Shelves for storing models were available but used to store models from previous years. The provision for printing facilities at the University of Newcastle first year design studio. Source: Author

The design tutor pointed out that the design studio is usually overcrowded, having over a 120 students in a small 3 studios, and that there is no room for a teacher's station. The teacher further stated it would be useful to have one at the design studio.

Environmental Control Aspects

The ceiling height and the unresolved issue of echo and noise were noted as problems the students faced in the design studio at Newcastle University. This was mentioned at the focus group, with one student considering going elsewhere to read besides the design studio

'...I think, personally if I'm doing things like reading where I need to focus, because I can't deal with the background noise.' (Design studio 5 Focus Group, Newcastle University, 2016)

Another student described the design studio to have 'too much noise and too much distraction'.

As the students' drawings show, a 'quite space' zone is recognised as needed, which showed the need to resolve the issue of noise.

Artificial Light (Seen in the Student Designer Engagement Map) and natural light are matters of concern amongst students within the studio, with staying beside the window the only one way of the students getting enough natural light; hence, their plans showed significant openings. One of the students, when completing the Student Designer Engagement Map, identified artificial light as a pain point in the daytime.

On the other hand, there seemed to be no significance in regards temperature variation, with no one having identified any issues when it comes to dealing with such a problem.

6.4 The Social Aspect of the Design Studio

The design studio and the activities that take place within it have impacted the students emotionally. Depending on the stage of the design project taking place, the students' emotional rollercoaster reaches its peak at the review and crit stages.

The design studio can be noisy and overcrowded, with the students most of the time feeling that they cannot focus when they are inside the design studio. Nonetheless, some of the students use the crowd as peer pressure to inspire them to work. For example, 'when I'm designing, I like to be here so I can talk to people, see what they're doing' (Design studio 5 Focus Group, Newcastle University, 2016).

The students use many tricks to make this temporary space their own for the course of the semester. They start to inhabit the space after they are settled on where they will be sitting. This change depends on the activity taking place within the design studio. First, they choose where to sit according to the previous knowledge of other students or their preference to sit next to the window, whereas others choose to sit where the power is; this sometimes depends on whether they have a laptop or require a desktop, which, in this case, will be acquired on a first-come first-serve basis.

As the time passed, the students settled into their places. They become 'territorial' about these places. They put personal things on them to mark out their spaces, such as 'Messing desks', so that people leave it alone. The students also tended to bring things

from home to make it feel like the space was their own. These things or items are usually books, plans and mugs (Figure 6-6).



Figure 6 - 6 The work space at the design studio. Source: Author

It is known that the studios are quieter when the portfolio phase is in place; still, most of the students tended to be at the design studio as the stress was not as pronounced when the interim or reviews periods were ongoing.

6.5 Technical Issues

The theme of technical issues has mentioned frequently at the University of Newcastle. The fact that the students chose where to sit in alignment with the availability of desktops shows the importance of being available at the design studio. Some of the students tended to use their own laptops, although there were many restriction faced by the students. One of the obstacles concerned availability, such as whether software was available.

'...you need certain software which is quite expensive, so that almost forces you to come to the studio because you can't do it at home'. (Design studio 5 Focus Group, Newcastle University, 2016)

Otherwise, the availability of enough desktops for every student to work was also an issue.

The other obstacle regarding technical issues centred on the capacity of the device used, with most of the laptops unable to accommodate large files or the software students would be working with. Therefore, even with the desktops provided by the university, they faced this issue:

‘Although there’s new ones that are powerful enough to run several software at the same time, whereas some laptops don’t, or you can’t get the specific stuff.... And they can be a bit slow sometimes, when everyone’s working on them’.
(Design studio 5 Focus Group, Newcastle University, 2016)

There is also the issue of storage on devices, whether laptops or desktops of the university. However, this is not as much of an issue now as this area has recently improved.

6.6 The Status Quo of the Design Studio

Recognised by many of the students’ drawings in regards their optimum design studio, there were labels and words repeated and mentioned many times and from different students. These words were seen to be associated with the state of the design studio at the time of the project, or simply when they started the semester. The accumulating models and drawings from the previous semester and the belongings of other students being stored in a chaotic manner were recognised as eyesore to students. They mentioned terms such as ‘clear’, ‘clean’ and ‘tidy’ spaces, surfaces and storage systems. It can be recognised from the design studios visited at the University of Newcastle that these leftovers take up significant space in the design studio, which limits storage systems and tables. As such, the students were required to make decisions as to whether or not they would sit over a space or start modelling on a table, or merely leave their own belongings where they chose.

This relates to the process of inhabitation over the period of the project or semester. The students showed many different ways of inhabiting the place and making it their own.

On a personal level, some brought plants and books to the design studio and placed them on their tables. Others brought mugs and drink preparation, such as tea and coffee, and biscuits. Some students labelled the table and chairs with their name.

On the level of the design as a whole, blankets and throws, decorations, such as tinsel, mini figures and stickers, were present at the design studio. In the first-year design studio, the studio was provided with a student list and staff list with their photos. This gave students the feeling of belonging and as being assigned ownership to a space.

6.7 The Nest

The Nest is a closed room inside the fifth-year design studio. It is a space designed to offer an informal space for students to relax, brainstorm and socialise with one another. The nest is a space to have some closed tutorials with a group of students and could also be used as a review space at times. The room is small with no windows besides the small strip of glass on the door. However, this serves the purpose of having walls that could be used to pin-up projects and drawings.

The anatomy of the fifth-year design studio comprises basic rows of desks with desktop computers, a modelling space with printing and photocopying machines station, and both areas separated by shelving units to allow for the storing of models. The presence of the nest helps to complete the other design studio activities missing within the primary space.

6.8 Conclusions

The case of the University of Newcastle is remarkable in the sense that the students ask for similar design studios, as provided in the sense of functions and zonings. Although the difference relates to the aesthetic aspect of the design studio, all the studios in the University of Newcastle also benefit from desk spaces, printing facilities and modelling spaces, with the fifth-year design studio also benefitting from a dedicated space for brainstorming, lounging and tutorials. The only take on the studios of the University of

Newcastle is the lack of a sufficient quantity of desks, desktop computers, and lounge seating provided in the space.

One of the main findings garnered from the students' drawings of their optimum design studio relate to visual connections outside the studio and relate mainly to nature. The students' drawings identified large, open windows, which showed their eagerness to sit in a visual open space. This shows a lack of visual attributes at their current design studio, although they do benefit from window openings.

The second main finding relates to the current state or status quo of the design studio. The words 'clear', 'clean' and 'tidy' were used repetitively, such as in regards desk space and shelving units.

The third finding related to the technical specs of the desktops available and the need to have access to various updated and reliable laptops if students wanted to work from home; otherwise, they would be left to compete on the limited number of desktops available at the design studio, which again might not be reliable in terms of storage space.

6.9 Reflection on the Methods Applied in The University of Newcastle

The studios visited at the University of Newcastle were two again, first-year and fifth-year. The design studios were different again to each other, and each one have signalled different themes and outcomes. Just like the Northumbria University. The methods used again changed between the two studios due to the availability of the students within the design studio at the time of the study.

The first design studio students were away at the time the studio was mapped and photographed, and the second time not many students showed up for the focus group, yet, this time there have been an extensive interview with the module leader. The interview added another depth to the data gathered which helped to verify and clarify the findings of the researcher from visiting the design studio space with no students.

Newcastle University

World-Class Civic University

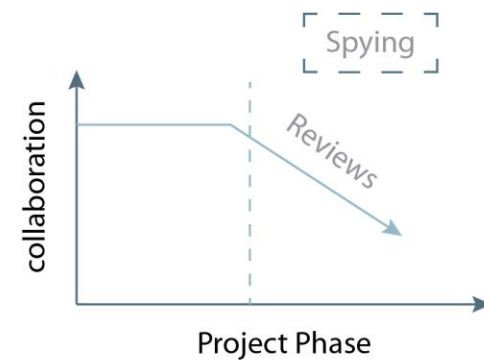
First Year
Shared Studio

Fifth Year
Their Own Studio

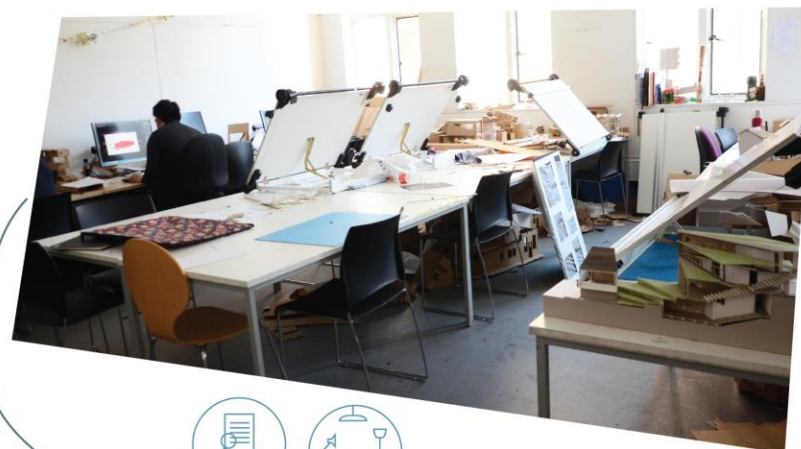
★ Access 24/7

Fostering Collaboration

School Level
Instructor Led
Student - Student



★ forms of inhabitation

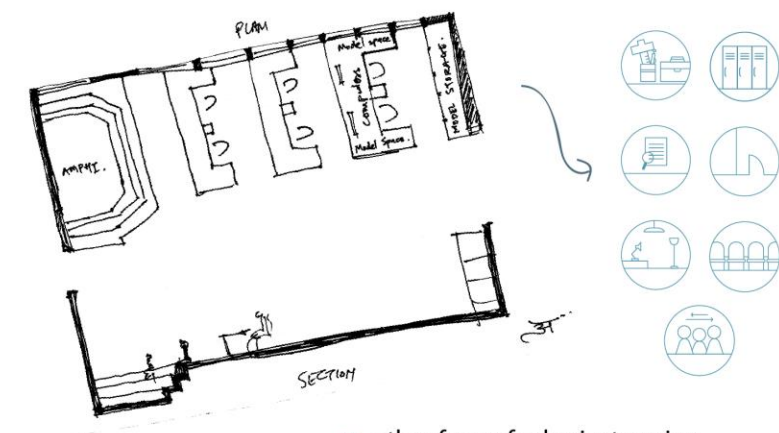


★ working space & messy surfaces

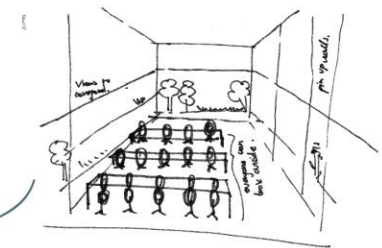
★ printing & scanning facilities



Students Sketches



★ other forms for brainstorming and socializing



★ view to the outside



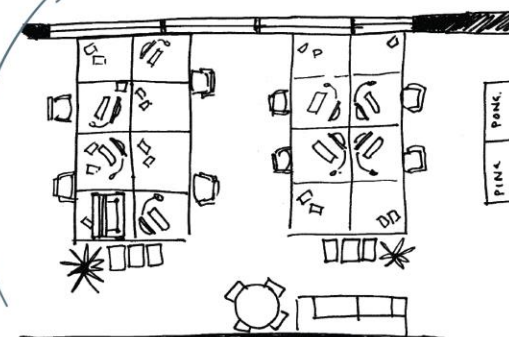
Background Noise

Artificial Light

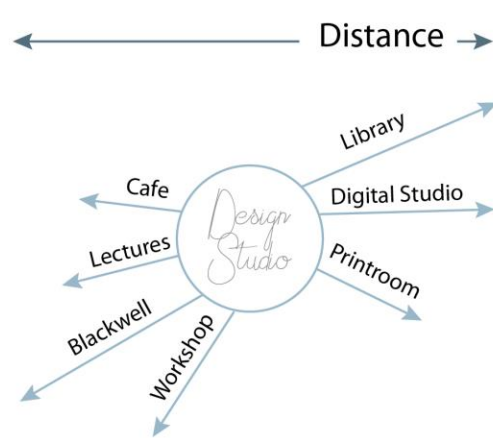
↓ need
Quite Space

↓
Painpoint

★ Privacy & bigger working spaces



"When I'm designing, I like to be here so I can talk to people, see what they're doing"



The image features a background of a light-colored stone wall with horizontal lines. Overlaid on this are several geometric shapes: a large teal rectangle on the left, a white rectangle on the right, and a thin, tilted white rectangular frame that encloses the white rectangle. The word "Seven" is written in a teal serif font in the bottom right corner.

Seven

CHAPTER 7: PLYMOUTH UNIVERSITY CASE STUDY

7.1 University Profile and Existing Design Studios

Plymouth is a city located on the southern coast of England and on the Atlantic Ocean. It is the second largest city in the South West (“History of Higher Education in Plymouth,” 2012). Plymouth has its name from the river Plym that run through the city, alongside river Tamar. With its position, it forms a natural harbour.

The architecture of the city has been destroyed in result of bombing of World War II. Sir Patrick Abercrombie was the civic designer who were commissioned to plan the city, after the success of planning other cities nationally and internationally.

The city of Plymouth is recognised as the home port of successful maritime traders. Nowadays, Plymouth is famous for shipbuilding and seafaring. It has now also diversified its economy with services and education.

The University of Plymouth was the Plymouth Polytechnic Institute, which gained status in 1992. It is a public university, which, since 2011, has been known as Plymouth University following rebranding. The University of Plymouth had many scattered campuses previously, but is centrally located in Plymouth.

The school of Art, Design and Architecture is located at the Roland Levinsky building, which was recently built in 2007, designed by architects Henning Larsen with Building Design Partnership (“Plymouth University Building: Roland Levinsky Building - e-architect,” n.d.)

The vision for the new Arts building was to create a centre for arts and a culture fusing both the city and University campus as a core for activity and learning. A central cross-point constitutes a mini city, in which the public, the Centre for Visual Art, and various university activities create city life. Activities are connected by ramps on different levels, reflecting the topography of Plymouth. The cross point is a buzzing artistic forum, where CVA, students and teachers

interact. The auditoriums, cinema, galleries and cafés in the building stand out as the new cultural meeting point in Plymouth.

The building's public square, notably facing south, affords views of the city, landscape and Atlantic. In regards the transparency of the building, the interior activities can be seen, with the character of the building changing throughout the year.

A dynamic wrap unites the activities of the building, stretching from street to sky as a continuous facade. The wrap is made of copper and has become a part of the Plymouth skyline, together with the churches and lighthouses. ("Plymouth University Building: Roland Levinsky Building - e-architect," n.d.)

7.2 The Study

Access to the university was given to the researcher by contacts, with permission to visit the fifth-year studios, observe the lectures, and interact with the students regarding the space.

All the students were more than willing to join the focus group session, and so the researcher needed to divide them into two groups; this produced two Student Designer Engagement Maps (Figures 7-1 and 7-2). The number of students in each group were 7, to make in total of 14 students who participated in the Focus group.

7.3 Data

There were three methods used in this case study: first was the observation through the eyes of the researcher, creating a visual record book by taking pictures of the space; the second method was the focus group, which was carried out through the completion of a modified Student Designer Engagement Map; the last method involved giving the students the opportunity to draw their optimum studio space.

Project Phase

Experience



Pain Point



Touch Point



Active Physical Zone



Opportunities for Collaboration



Students Insights



Emotions



Figure 7 - 1 The first Student Designer Engagement Map with the fifth year design studio at Plymouth University. Source: Author

Project Phase

Experience



Pain Point



Touch Point



Active Physical Zone



Opportunities for Collaboration



Students Insights



Emotions



Figure 7 - 2 The Second Student Designer Engagement Map with the fifth year design studio at Plymouth University. Source: Author

7.3 Findings

The findings were based on two focus groups for the same studio. This time, the findings were somehow similar across both focus groups, without them having any impact on each other. The same issues identified in the Discussion were detailed. They have also paid attention to similar details of how the design studio would look.

In this case study, a couple of themes were referenced. These themes are the university's policy and teaching methods within the design studio. The previous themes from the other case studies were present as well, although lacking the technical issues found when performing the case study of the University of Newcastle.

7.3.1 Collaboration

The students had different views in regards when they should collaborate and what collaboration could be defined to mean. The instructor-led group work identified as collaboration and, depending on the groups assigned to them, some students described this phase of the project as 'different difficulties, difficult conditions'. It was considered to be a pain point in the design studio as 'people were put together into groups with people they hadn't worked with before and most people found that to be quite challenging'. The students dealt with such situations of 'drama and intensity' either by containing them or by expressing their views. Importantly, it was noted as 'a real challenge for a lot of people'.

The opposing students considered that instructor-led collaboration group work was 'creative', 'productive' and 'very constructive'. Though disagreement and differences were present amongst the group, they nonetheless recognised that such differences only made their project 'stronger'.

Another downside to the group work could be identified when not everyone in the group gave their opinion on the matter at hand, which they also considered to be a pain point. 'On the other hand,', it was stated, 'we had no arguments in our group at all, which I think is also a pain point. Everybody was of the same mind, just agreed and agreed' (Design studio 5 Focus Group, Plymouth University, 2016).

At the end of discussing this point, there were two groups: one that stated that it is 'healthy' to have a debate within the collaborative group work, describing it as both 'creative and challenging', whilst the other were sarcastic and recognised it as 'too much'.

The other thing to consider in collaborative work was the fact that this effort into letting the students work collaboratively is that it is a learning experience, which prepares students and trains them for the industry, where they would find themselves in a similar collaborative environment. Overall, the feedback on this matter was that it is 'positive'; however, when light was shed on this matter, negativity began to appear in the form of 'struggle, [being] stuck and confused'.

Some of the benefits of offering help and work in a collaborative manner, as noted by one of the students, included the mutual benefits to be garnered from the 'process'. The student would have the privilege of garnering in-depth insight into how other students work. Moreover, they could offer help and advice to other students. The student claimed:

'All the time, I think with architecture again you're always looking at what other people are doing, could you use that technique that they're using, would that work for you. Or you see someone doing something and you think, 'I know a better, more productive way to do that,' so you suggest that to help them through that process.' (Design studio 5 Focus Group, Plymouth University, 2016)

7.3.2 Themes Related to Physical Characteristics

Building up from other case studies, the usual repetitive themes were found in the case studies, as well as more attention directed towards movement within the design studio and the layout. This was represented mostly through the drawings of students regarding their optimum design studio.

Movement:

There are two types of movement identified within this case study: the first within the design studio itself; the second within the university and the spaces adjacent to the design studio.

As the students own the space, they were able to enjoy the space for the year. The only restriction was with the time limit that they could spend in the day. The design studio is open from 7am through to midnight. The students were not required to move any of their drawings and models with them at the end of the day as they have space the second day due to not sharing the design studio. Moreover, they do not need to lock the space because of the security doors.

The students have their own desks and working spaces, which are sufficient in number. They circulate around them regularly, depending on many factors, such as the mood and the people with whom they work. During the time of the tutorials, the students were required to carry their work to the big tables so as to show the tutor their work. There is another room attached to the studio, which has more working space and desks.

In regards movement in and out of the design studio, students have to go to the workshop, library and lecturing facilities. The route to the studio is through the use of lifts and/or staircases, which students identified as very busy.

Another form of movement was suggested by some of the students in their drawings, with the designs different to those of the other case study. These drawings were completed on a different scale—not only encompassing a single room but rather an outstanding building, which, by itself, was seen to consist of multi-level spaces, accessed by stairs. Alternatively, there were ideas of more than one room within the premises with the aim of reducing the trips outside of the design studio by placing all necessary functions at one location.

Complementary Spaces (Functions):

The students recognised many spaces as completing their design studio experience, with some considered necessary for the project and the tasks needed for their studies, such as

the library and workshop. Furthermore, other spaces were needed, including a smoking zone and places to eat.

For the workshop space, as discussed between the students, there was a recognised need of a workshop space, determined by the size of the model itself:

‘This depends on what kind of models you’re doing, sometimes it’s a little sketch models here, sometimes it’s much more detailed models elsewhere. In terms of assembly, I would say most people do them here, even if their cuts parked in the Brunel workshop, the actual putting it together happens in these few rooms here (Design studio)’. (Design studio 5 Focus Group, Plymouth University, 2016)

Furniture and Spatial Features:

In terms of spatial features and proximity, there are many spaces needing to be within the design studio from the perspective of students, besides the always-identified kitchen, eating and drinking facilities (Figure 7-3), work spaces and modelling spaces; these include storage room, gallery space or exhibition space, dedicated presentation tables, and a teacher’s or professor’s station.

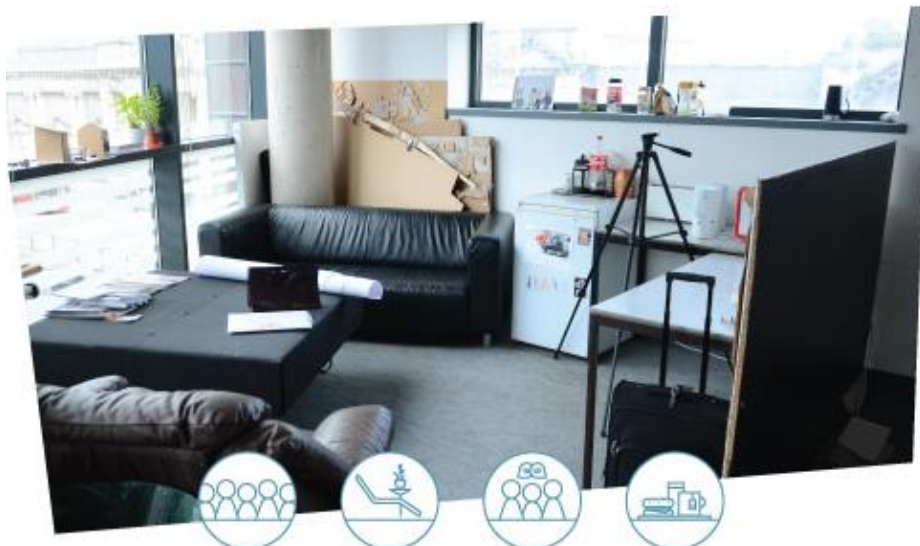


Figure 7 - 3 A pantry area for students within the design studio. Source: Author

The connection to the outside world is very much appreciated from the perspective of the students of Plymouth University, as shown through the emphasis placed regarding opening public spaces and having a view to the outside in order to be able to access such a space, either by having ‘openable’ windows or otherwise through greenery and natural features, such as river and trees within a very short proximity from the design studio (Figure 7-4).

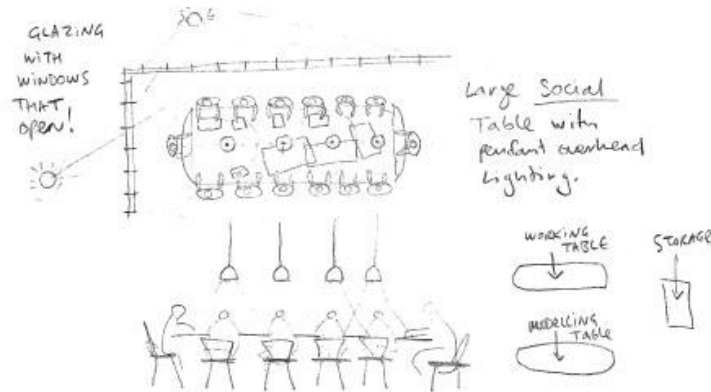


Figure 7 - 4 One of the students' drawings showing the 'openable' windows that students would like to have in the design studio. Source: Author

Although not clearly discussed, there is a recognised need for power access, as shown on multiple occasions in the drawings and on the Student Designer Engagement Map. Laptops were located on the tables in the middle of the design studio in many of the drawings.

The furniture varied between lounge furniture for brainstorming areas and relaxing, and between singular desk spaces, without partitions. Moreover, there are the tables meant for group works, usually represented by long central tables that fit many students.

Storage furniture, such as personal lockers and model shelving units, were also illustrated, with one of the students having drawn a whole storage room equal in its weight to the studio itself. On many occasions, the students pointed out the need of a space for the teacher or the professor, located by the wall for the use of the projector and for use as a pinning wall.

Environmental Control Aspects:

The students' focus on the discussion was centred on the fact that they have a glass wall covering a huge part of the design studio. This caused two major problems for students concerning environment control aspects: the first being that they cannot open the windows to get fresh air due to the design of the building, where only mechanical ventilation is present; the second centred on the light within the design studio, with this particular design studio located next to an 'advertisement screen', which flashes light both in the day and night. One of the students described the light as a pain point as it was blinding. One was upset by the fact that, even during a presentation, 'the lights were off and you'd be watching the projector, there would be lights flashing at the sides of the projector'. The university has reacted to this issue by dimming the colours; however, still, the students prefer to work on the room that is not in view of the screen.

Notably, blinds were present but, by turning them down, the students claim that they would 'knock out' the natural light as well. The students would therefore then opt to leave their models and materials on the ledge of the windows, with the blinds always open and never turned down.

The Acoustics in the design studio were controlled with acoustic panels, with no objections and dissatisfaction from the point of view of the students, they seem to do the job they are intended to. (Figure 7-5).



Figure 7 - 5 Artificial Lighting and acoustics panels at the fifth year design studio in Plymouth University. Source: Author

7.4 Emotions

The design studio is a place where a range of emotions can be witnessed within its boundaries as well as beyond; tears, tiredness, dancing, sleep deprivation and clueless were some of the emotions highlighted in the Student Designer Engagement Map and through discussions with the students. Most of these emotions were seen to be related to the frustration of students, and were negative. However, some of the emotions were positive.

These emotions can happen as a result of many circumstances, some related to the students themselves, whilst others are caused by outsider influences, such as the teaching policies or university policy.

One of the students considered that the emotions being experienced right now could be the same as those in prison; they have no connection to the outside world, and their instructors are demanding the ‘impossible’.

‘Personally, I spend most of the time the whole day in the studio so I don’t have a chance to talk to anyone else’. (Design studio 5 Focus Group, Plymouth University, 2016)

Within the tutorials phase of the project, the students were seen to experience uncertainty about feedback and workload. The students referred to the mass of things they have to tackle within one project, which, to them, is unrealistic:

*‘What we’re working on is everything.... Can everything work in reality?’.
(Design studio 5 Focus Group, Plymouth University, 2016)*

Another form of emotion within the tutorial phase is excitement, although it is not a lasting emotion. The students recognised that, when they have an idea, they are very excited to show it to their tutor.

Dread, embarrassment and the want to hide were some of the other negative emotions some students go through: ‘You have done so much that you want to rest’, ‘Tired’, ‘We just can’t do anything’, ‘Bored’, and ‘It’s just that you work so hard’. This provides a rationale, in their opinion, as to procrastinating, with some suggesting this approach as a

way of recovering from whatever emotion they might experience within the tutorial phase.

The timeframe of recovery could range from days to months. The reasons for procrastination related to what caused this in the first place, such as ‘You want to treat yourself’.

During tutorials and reviews, the students—especially those for whom English is not their first language—experience a lack of understanding, which ultimately leads to disappointment. The students experienced disappointment also as a result of the teaching policies and the fact that there is no right or wrong answer in architectural education, which leads the tutors to not directly lead students to the answer. One student stated:

‘The thing is none of the tutors will tell you what’s right and what’s wrong and how you should do it because it’s your project. So that’s where more questions come in because they tell you to think about it differently. That’s how you end up with more questions. Because they won’t tell you ‘this is wrong, this is right’. They want you to decide that for yourself’. (Design studio 5 Focus Group1, Plymouth University, 2016)

Another student from the other group stated the same:

‘Sometimes you go into a tutorial with two questions and come out with 50. Sometimes you go in with no questions, then you realise you’ve had that question, you have it answered. It’s 50/50 really, you can go either way. You can have your questions answered or you could just end up with more questions. That’s where there’s uncertainty comes in’. (Design studio 5 Focus Group 2, Plymouth University, 2016)

The students use Facebook and, through this platform, sometimes share their emotions ‘openly’. Moreover, although they have experienced all of these emotions, the students considered this as helping them to grow stronger. Furthermore, they stated they are prepared to go on for other years of studying.

Because of the teaching policies, coupled with the fact that the tutor is there for guidance only and that the way the project turns out to be the responsibility of the student, the

students felt negatively after the tutorials and interim reviews. This encouraged them to devise tactics to make them feel good—especially when approaching the final crit.

Major changes were seen to take place on the project at the end of the term, where ideas were developing and waiting to be disseminated. The students would go with an idea and feel very precious about it, and then they would discover when sitting with the tutor that other ways could lead to a better outcome.

‘I think that’s the thing with the tutorial, if you go to tutorial, you think you’ve got your design sorted and you’re all ready to get going and the tutor says ‘this is totally wrong, it needs to be flipped around’, that’s when there’s disappointment’. (Design studio 5 Focus Group, Plymouth University, 2016)

The students were also seen to be very careful about what they asked the tutor to look at because they didn’t want to be in a situation of changing their design:

‘You need to craft your question, when you think you’ve finished it, you’d ask a closed question rather than an open one’. (Design studio 5 Focus Group, Plymouth University, 2016)

The feedback sessions turned out to be a consolidation and reassuring session. This happens at later stage of the design, although the students know that the tutor’s role is to give guidance. Whether or not the guidance is accepted is up to the student because it is their project.

Some of the students sought help and guidance from other students, rather than from the tutors. This is related to the fact that they are available:

‘I think because we’re in the studio all the time, if you suddenly ... For example, like with (X), I’d been working on a model on a non-tutorial day and the next tutorial was on the Friday and it was a Tuesday, I was too engrossed in it to be able to look at it from a distance, so I just had a chat with Tim and he was able to give me that tutorial feedback that would have been exactly the same as with a tutor, just different eyes looking at it’. (Design studio 5 Focus Group, Plymouth University, 2016)

Another tactic adopted by the students is owing to the way teaching occurs at the design studio:

'In this week's tutorial, they want to change something about the design, I'm like, 'Let's leave that for next week'. So we leave that for next week. I say, 'I appreciate what you're saying, but, yeah, bye.' (Design studio 5 Focus Group, Plymouth University, 2016)

The university policy regarding the design studio's opening hours impacted the students' emotions, and they were split regarding whether it is a good policy. As noted earlier, the school's design studio is open from 7am through to midnight. Those students maintaining that the policy is good state so because 'It makes you very productive during the day and you know that by 12 o'clock it will shut down so you have to do it anyway'. One student was seen to be against the policy because it would work the other way:

'You think 'Oh it's open till 12 so I don't have to be productive during the day', and people go home, have dinner, then come back at 6pm and stay here until they get kicked out. But overall it encourages a decent way of working, sleeping at the right time'. (Design studio 5 Focus Group, Plymouth University, 2016)

The students pushed for the studio to be open to be open twenty-four hours, as voted for a couple of times. However, this was rejected for security reasons. The students agreed with the decision, despite it being for another reason, which is their own health and ensuring a healthy balance:

'You should have a balance, you should differentiate between where you live, where you study, where you sleep. It's a known thing for people to have meltdowns and breakdowns because it gets a bit too much for them. 24 hours encourages that. You shouldn't forget that outside the studio space there is creativity and life out there and we don't need to be spending all the time here.' (Design studio 5 Focus Group, Plymouth University, 2016)

The phrases 'sleeping under my desk' or 'sleeping on the floor' and 'sleep' appeared on the Students Designer Engagement Map, indicating that the studio itself can be a place where students inhabit and use as a home if not limited by time.

Those students against the university decision think it is good to have it open 24/7, maintaining that it gives them flexibility to work the way they want and for the duration they want:

‘(the current situation) I think it doesn’t allow for flexibility in how you want to work. The library is open 24 hours, so when it’s essay writing, we’ll go to the library to work for 3 days straight.’ (Design studio 5 Focus Group, Plymouth University, 2016)

7.5 Models

Models is a media associated with the design studio. In this focus group, they discussed the use of the models and modelling in architectural education and in architecture in general. The student put modelling as a touch point and a successful way of communication, not only with their tutors or peers but also with people from outside the Design discipline.

‘The models are the best way because you can show them to anybody. They don’t have to be from a design background, they could be your client, who’s a lawyer or something, and it shows something a lot easier to understand than a drawing can.’ (Design studio 5 Focus Group, Plymouth University, 2016)

The reasons for models being widely used and favoured was highlighted as follows:

‘Because they can hold it and touch it, and even if they’re someone who’s never considered design as what they want to do, they can immediately imagine themselves in that space. We had this project for professional studies with (X), we made a mock-up model of the space we were proposing to be redesigned, this is again one of those types of live project, that might go ahead. We made a physical model for them and she was so happy because she could instantly imagine it for herself as well what could be done. I think it’s still the most preferred media to show someone isn’t it. And they think it’s very “effective” in translating their ideas and designs, especially where people can actually touch it.’

'Even with your parents as well, you can show them the drawings on the computer and they go but if you give them something that you've actually put together, then they're like "ooh yes"!' (Design studio 5 Focus Group, Plymouth University, 2016)

7.6 The Status Quo of the Design Studio

The studio in the University of Plymouth consists of the same elements seen in other studios, though the students in this studio behave in a different manner. The studio has music that is played on the level of the studio as a whole, and not on an individual level. The students do not seem to use headphones much (This is new in regards with the other case studies, students used headphones to be in their own bubble). This was not mentioned much, however. With this, the students have confessed that there are conflicts of interest in regards music in the studio.

Students in the studio are also recognised as talking much more, although they state that they have to turn the music down at times when they need to concentrate. One student considered that there needs to be a consensus when students play music on the speaker.

'Well we're doing very well in here. We've got BBC Radio 6 on all the time. And its background and inoffensive music. Everyone agrees on it. It's going well.'
(Design studio 5 Focus Group, Plymouth University, 2016)

The students at the University of Plymouth have their own desks:

'There's a desk for everyone on a studio day, but then on a non-studio day, not everyone is here, so there are spare desks so if you want to move around. Different scene, different people, different light, sound, different smell.'
(Design studio 5 Focus Group, Plymouth University, 2016)

The whole design studio is packed with models and materials for model-making. The studio is quite spacious and can hold many models; in its current situation, however, it is overflowing with things. They even use the ledge of the windows to store some of the models; this dictates that they keep the blinds open at all times (Figure 7-6).



Figure 7 - 6 The window ledge being used to keep models and other things that prevent the blinds to shut properly.
Source: Author

Students have said the following:

'With architecture it's a lot of models, a lot of 'things' so you can't just hide it away or leave it on a laptop or whatever, it needs to be stored somewhere. But it is something that we hope to do at the end of the year, is to clear out, because there are lots of models that have been here for five years or so. All of those there have been here for year (pointing to the models).' (Design studio 5 Focus Group, Plymouth University, 2016)

There is concern regarding storing their own models that they are working on:

'I think we've reached the point where we have A2 models are really running out of space. Where are we going to stack it up?' (Design studio 5 Focus Group, Plymouth University, 2016)

7.7 The Findings Illustrated

Looking at the findings in a holistic way, an illustration of the design studio has been tried to be created in order to summarise and include the findings garnered through this

case study. With the students' drawings, each of the students in this case study has produced a very different layout and on a very different scale. This made it difficult to gather ideas into one illustration. As such at this point, a collective of the designs and findings has not been through. In fact, some of the findings and the analysis are gathered together to be produced in Chapter 9, as designs applications and consideration or propositional guidelines to design and understand design studio.

7.8 Reflecting on the Methods Used within the Case study of Plymouth University

Reflecting on the methods used in this case study, the study has been carried in one design studio, the fifth year design studio, yet, there were two focus groups instead of one because of the high number of participants. Two Student Designer Engagement Maps were generated for the same design studio and the same projects that is carried in the space, both were rich with data that surprisingly confirm each other. There has been an informal discussion with the tutors of the design studio, notes were taken but not included within the case study.

In this stage, the methods that showed to work well together and generate sensible data are the focus group, the visual anthropology observation and the interview.

The coming case study will include the participative aspects as it is the in-depth case study, The University of Sheffield case study have the same methods that have been used in the case of Plymouth University and the fact that the researcher tutored the first year design studio and shadowed tutors as well. The interview has been performed with a tutor and a former students of the University of Sheffield, giving the layer of past and present and what did work before that is not now and vice versa.

Plymouth Universtiy





Eight

CHAPTER 8: THE UNIVERSITY OF SHEFFIELD CASE STUDY

8.1 University Profile and Existing Design Studios

As written on the University of Sheffield website, Prof Peter Blundell Jones states the history of the Sheffield school of Architecture:

'The University of Sheffield School of Architecture first opened its doors at the beginning of 1908, shortly after the university was founded, and took up its place in the tower of Firth Court. The essential founder was Edward Gibbs of Flockton and Gibbs, the University's first architects. Started with the help of the Sheffield Society of Architects, the school at first served largely to train the sons and personnel of local firms, and remained very small until the Second World War, run from 1928 to 1957 by Stephen Welsh, a Liverpool graduate under Charles Reilly.

In the post war period it saw a huge expansion, bringing in students not just from across the nation but across the world. The Firth Court Tower rooms were soon abandoned in favour of the Sunday School in Shearwood Road, then in 1965 it moved into the upper floors of the new Arts Tower. This accompanied the development of a Faculty of Architectural Studies embracing Town Planning, Landscape and Building Science, which lasted until recently the school moved to Social Sciences. Over the remainder of the century the school grew in size and reputation, producing many distinguished alumni.

Its good reputation amongst students and its strong research record have assured it a consistent place amongst the top schools in the country.'

*Professor Peter Blundell Jones
September 26, 2014' (Sheffield, n.d.)*

8.1.1 The Arts Tower

Designed by architects Gollins, Melvin, Ward & Partners, after a competition, opened around 1966 by the Queen Mother, and it was built to be host for 160 staff and 1000 students. The Arts Tower (Figure 8-1) is a Grade II* listed building, and in 2008 it went under renovation for its interior and façade to extend its life for 30 more years. (“Introduction - Arts Tower Project - The University of Sheffield,” 2012)

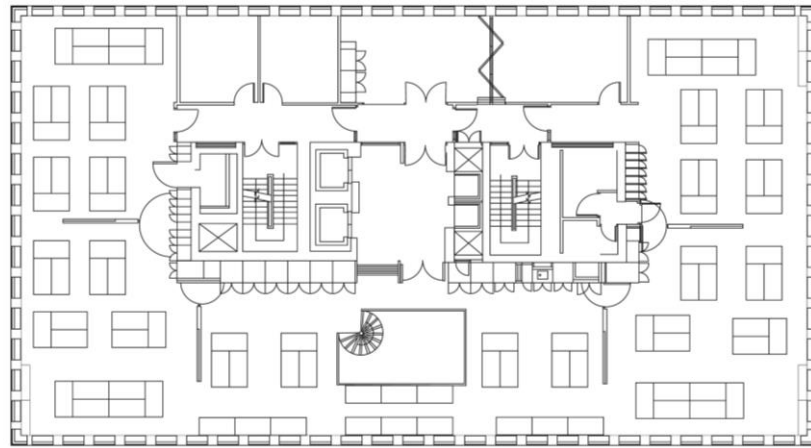


Figure 8 - 1 The Arts Tower Plan. Source: Author

8.2 The Study

This study in particular began as the researcher shadowing the first-year coordinator in the studio. Subsequently, the researcher became a participant in the research for almost three months, with participation through tutoring and reviewing the students of one of four group studios running at the time of the study.

The other data was collected from the MAAD (MA in Architectural Design) design studio, with students participating in a focus group and an interview with one of the tutors in the programme.

It is best to note that there are two routes to get a masters degree at the University of Sheffield, MArch which is the RIBA/ARB accredited route and the MAAD which is the Masters of Art in Architectural Design.

In the MArch programmes, it is based on two years of education consists of Live projects with real clients, and different themes studios that the students join and learn ‘variety of ways of working’, experiencing many different studios which consists of many different themes in architecture. This path which is RIBA accredited means that the students who takes this Masters will be exempted from the Part 2 of the RIBA examination (Sheffield, n.d.).

The other postgraduate taught Masters programme that is provided by the University of Sheffield is the MA in Architectural Design or (MAAD). It is a design based and mainly based on design studios for full year, and is also consists of the Live project. This route is mainly popular for international students who are not aiming to undergo RIBA examination.

Although in the initial plan of this study was to limit the study on the MArch studios that were accredited by RIBA as starting point, the failure of the survey and the need for permissions to enter design studio did not allow for this course. Thus, the focus on this study for the postgraduate programme is on the MAAD studio.

8.3 Data

At the University of Sheffield, in a pilot attempt trial of the Student Designer Engagement Map, the researcher was involved in a focus group with various PhD students and one Master’s degree student (MArch), all of whom assisted by giving their insights on their experience of the design studio—not necessarily the Sheffield design studios (refer to the initial plan in Chapter 4).

There was an opportunity to talk to a previous student and a current tutor at the University of Sheffield regarding the shift to the arts tower and the studios of the establishment.

With the first-year studio, the researcher happened to gain access to a group of students at the end of the year, which led to completing a focus group (Figure 8-2) with them before shadowing and tutoring the next year group of first-year students. In the case of the latter, no focus group took place; rather, observations and participation were carried out in the design studio, along with maintaining a journal of thoughts based on the researcher's own experience within the design studio. The studio was photographed without the students present.

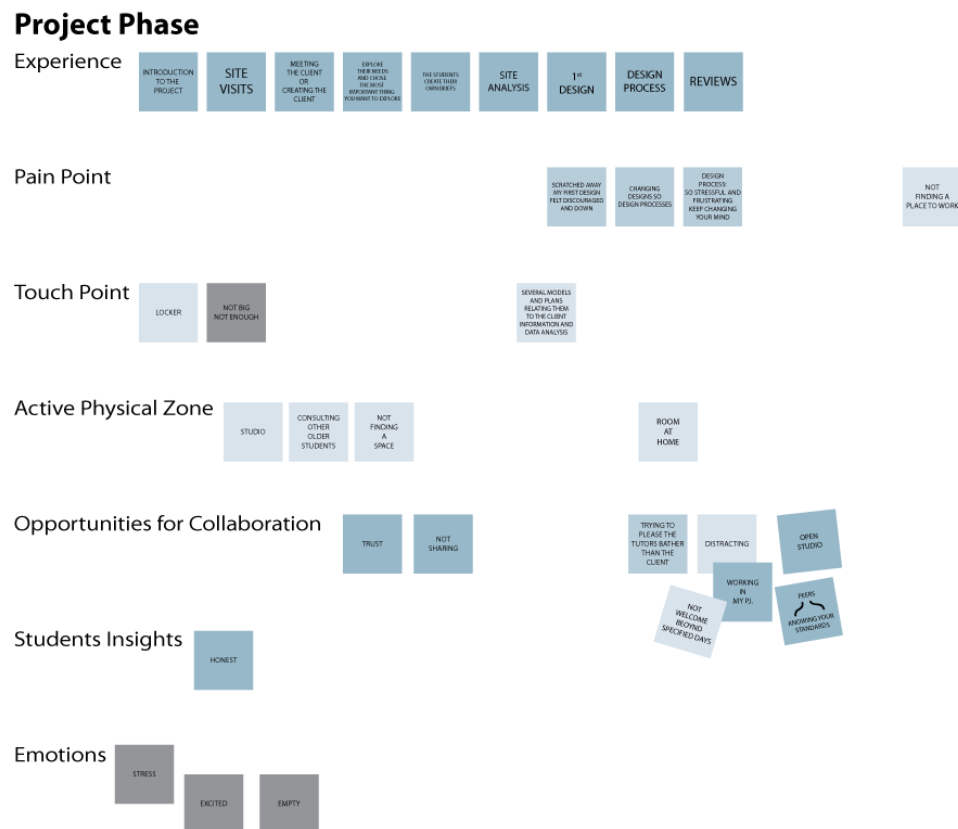


Figure 8 - 2 The Student Designer Engagement Map done at the first year design studio at University of Sheffield. Source: Author

With the MAAD (MA in Architecture Design) (Figure 8-3), the researcher had the opportunity to complete a focus group with three international students from the studio.

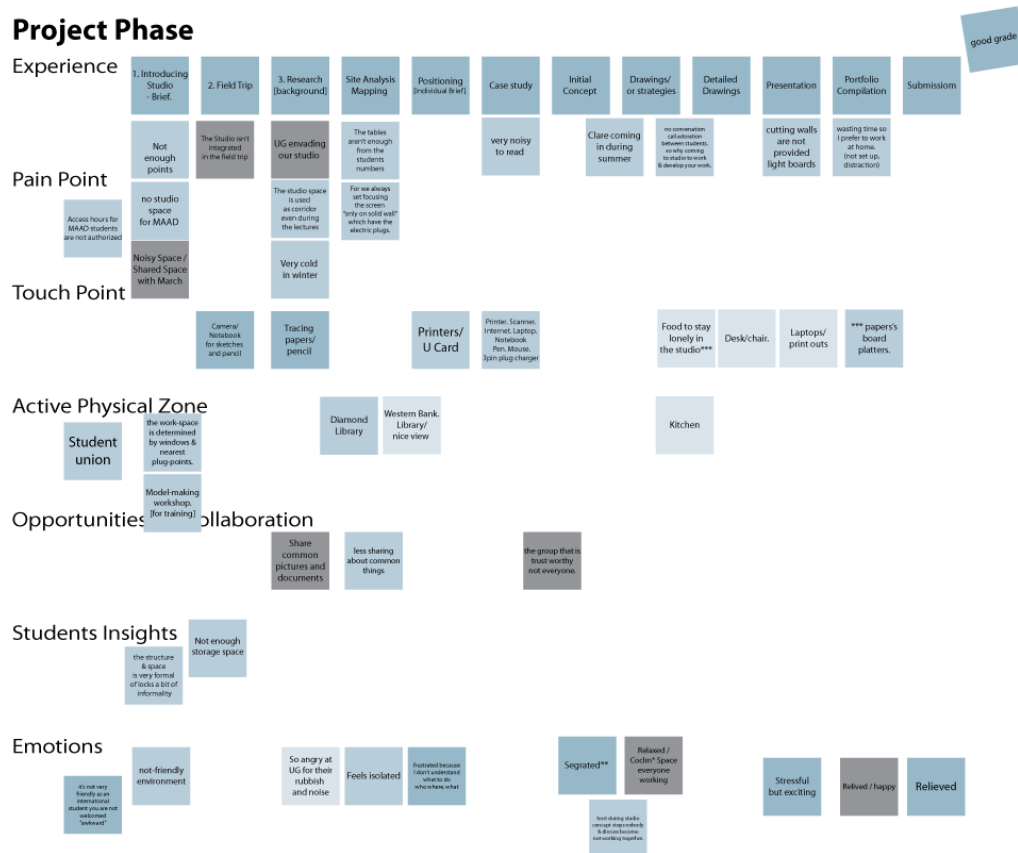


Figure 8 - 3 The Student Designer Engagement Map done at the MAAD design studio at University of Sheffield.
Source: Author

8.4 Interview

The researcher carried out an interview with a former student and a current tutor of School of Architecture at the University of Sheffield (Please refer to Appendix 6).

The first question centred on the studios the students had studied in, and whether such studios shaped the way he approached teaching at the University of Sheffield. His answer was positive, with the tutor highlighting a sense of belonging and ownership to the studios, in addition to the notion of the students reclaiming the studios to their own.

‘Well, I’ve studied here. So I have always been in this building, the fact that I am still here probably suggested that it has done its impact certainly on that kind of

teaching that I approach teaching architecture that I think being in this building has kind of impact on that. Having said that we did move out from another building number of years and we were in a building that has been different and I think they did have some impact on the way that we taught but I think there is still underlying ethos that is still there, I think that this building in fact has had a huge impact on me, I think the openness and in some sense that space, the ability to kind of always to look over the city and see lots and lots going on, I think has a big impact the way I think about architecture, but I think also one of the things that we have also been grasped on in this building is also the sense of isolation because it is so high above the ground. And I wonder whether the idea, it is always been a bitter of issue that the school of architecture which is kind of socially driven and talked about socially engaged is actually completely removed because it is so high up on the top of the tower. In a way I wonder whether this sort of isolation is driven that agenda in an extent in a questioning way, I think it has but I also think, this building is so much nicer now than when I started, but I think there was a certain sense of freedom that was offer by this building, because of the open spaces as studios, but when I started here the building was not in a very pristine state and I think there were more in sense that you could do more in developing or changing the space to set your needs. There is lots of flexibility you can paint things and the columns, you could kind of bring in furniture and you could do different things with it to actually make it your own, that was different sort of approach really, so I think that had some influence sort of the way that I've brought up to be an architect'. (Leo Care, University of Sheffield, 2014)

Nowadays, surrounded with new furniture, new white walls and whiteboards, causes an issue for debate, where the old setting allowed students to benefit from more freedom, whilst the new setting is very limited. Nonetheless, new opportunities have been presented, especially in the sense that the students expects the university to provide them with the very best facilities and spaces in return for the huge funds paid for their education:

'I think they won't have the opportunity to make their mark, but I think the time had changed, and because students now are having to pay such a large amount of money to study I think they expect different type of education and different type of working environment, and actually I do agree that there isn't something there in a way that was a bit messier and that would give more opportunity to kind of change their spaces, but I think the climate has changed around that, so it is a difficult one'. (Leo Care, University of Sheffield, 2014)

Some sense of ownership of space is important for the students if they are to improve and produce more in line with the new changes. The studio space continues to be appreciated by the students and the tutors as well, with decision-makers needing to understand this:

'The sense of ownership issue is an important one and I think in school of architecture the amount of space the students have is being reduced to some extent partially because numbers of students are getting greater, and I think that numbers of school of architecture in this country have actually kind of done away with studios space and got rid away of this space which is essentially owned by the students, and that is something that we will fight to keep wherever possible and I think it is partly about that even if there are limitation of what can be done in that space I think I still there are strong sense of ownership here, and providing space that student can essentially inhabit is really an important partly of what goes here and that ethos is going here for a long time'. (Leo Care, University of Sheffield, 2014)

Importantly, being in an iconic building is not always appreciated, as it tends to stop students from freely using the space as a result of the restrictions that take place in the spaces. In this sense, the following is stated:

'A lot of people, and I will tend to agree, believe that the School of Architecture could be just in a big shed, and in a way that could just actually facilitate a huge amount of expression in creativity and flexibility that students and staff could actually make it their own. I think there have been some interesting examples of school of architecture are more like that, historic examples and also newer one,

certainly I don't think it have to be a statement'. (Leo Care, University of Sheffield, 2014)

The studio model could be borrowed and used between other learning facilities and therefore not limited to higher education exclusively:

'I think having an amount of flexibility and the space is flexible or a range of different working and learning styles and method is important and then going back to the design of primary and secondary schools, I still think that the studio model and the studio way of learning is still a powerful one, and I think it is something that I personally believe would benefit primary and secondary school also to a large extent as well having that flexibility in the space to be able to change things around, and people have tried that and it doesn't always work because again everybody needs to buy into that, and whether the national curriculum allows that to happen is another matter'. (Leo Care, University of Sheffield, 2014)

8.5 Personal Teaching Reflection

The way in which learning happens in the design studio is infinite; you would have thought a lecture that spans over seven hours twice a week is a something that needs to be prepared for a long time in advance. In the design studio environment, however, you cannot really anticipate what you might talk about on a particular day. Of course, there is a frame of architecture, and that can be seen to unfold with lots of sketches, plans and sections. Sometimes, for an outsider, these drawings make no sense. Nonetheless, they evolve and develop away from the initial thoughts and ideas. In this same vein, in regards tutor preparation, it is always a surprise how the brief can change—even for not-so-good students. In this regard, it is all based on students' perceptions and students' backgrounds in terms of how this can be translated into architecture.

The first project presented a little bit of an introduction into what the city looked like and how it was viewed through the eyes of the students. It was interesting to note how students started to go beyond the routes they take usually and to discuss the sounds they heard and the foods they liked. They really began to appreciate their surroundings and to

think a little deeper in a short time—in as little as a week. The researcher adopted the role of passive shadower in this process, observing the studio but not the task, whilst also reviewing the students. This latter task, however, was quite personal, centred on the way in which the students perceived their own room. Most of the students were international, and so this was their first encounter with the city; they were therefore away from home, where ‘home’ was now students’ accommodation, whether a room, apartment or even a house. What they were supposed to do was assess their rooms according to their own views.

It struck the researcher, when considering the curriculum of the design studio, that everything could be seen to work together to give the students a taste of everything in the architectural domain. Everything worked as a symphony to impact the ways in which the students thought; almost brainwashing them yet in such a way so as to allow them to dig deep inside themselves and find or maybe realise who they wanted to be. Thus, the following projects and years in their design education would have developed and created their own voice in terms of approaching architecture. The idea of choreography was present when looking at the whole view of tutors/studios working collaboratively. To the researcher, it was pretty obvious that, in order to design such an experience, there is a need to put yourself into many different pairs of shoes and to learn from others. Even differences were accepted and welcomed as part of the studio, providing a model for students of what they might or would definitely face in their future as designers. Arguments were always welcomed as long as they were well-considered and well-defended.

From the researcher’s perspective, it seems rational to suggest that many design studios would teach in the same way, although any different approach would ultimately have its own pros and cons. What the researcher did consider is that students are exposed to complex ideas and problems, with solutions in the shape of architectural answers not what are awaited, especially when this unfolds in a social science School of Architecture.

8.6 First-Year Findings

8.6.1 A Lack of Furniture and Storage Space

There was a lack of furniture to accommodate the students, especially when considering that the design studio was being used by two year groups alternatively during the week, which ultimately made it more difficult for students to find somewhere to work.

The tables and seats were not chosen by the students for a certain criteria other than availability—‘The table you find that is free is the table that you take’. One of the students explained, ‘The very first day we were in groups so we would just find a table to fit us all’, with a preference to be away from the centre and to locate themselves at the edges of the design studio.

The lack of working space is accompanied with other problems in relation to storage space, with the students talking about the lack of storage, such as in terms of personal lockers and material storage (Figure 8-4). Furthermore, it was highlighted that the lockers that were available in the space were either not enough or not big enough for what the students would like to store in them:

‘What happened to me more than once, to come here and want to work here, and try to find a place and I’d just bring all my stuff, carry them all here, and when I got here it was, like, I need to go back.’ (Design studio 1 Focus Group, University of Sheffield, 2016)

These problems started to put the students off going to the design studio:

‘After a while, it just felt like, why should I go there because I’m not going to find a place, so I’ll have to work here.’ (Design studio 1 Focus Group, University of Sheffield, 2016)



Figure 8 - 4 The Lack of storage spaces impact on the First year design studio. Source: Author

8.6.2 Emotions

There are surge of emotions associated with the design studio from the point of view of the first-year students, with these emotions tied to the phase of the design project they are going through.

With the design concept stage—which is known to encompass the most uncertainty of all the stages in regards the current students—the following comment was made:

'It's very stressful, the design process. It's where you could change your mind over and over again. There doesn't seem to be a real solution. I found it really stressful—my design process. And when I had my final design I was really relieved because now I could focus on doing really nice drawings to show my ideas and focus on the different stage of how I'm going to show my concept etc.'
(Design studio 1 Focus Group, University of Sheffield, 2016)

As there is more than stakeholder in the design project, the students felt unsure as to whether or not they should satisfy the client or the tutor:

'The design process I felt like I was trying to please my tutor rather than pleasing the clients. Because the tutor gives an opinion on my design and it felt like I was trying to please him and kind of have a design that would work rather

than trying to make the clients happy.’ (Design studio 1 Focus Group, University of Sheffield, 2016)

The confusion surrounding what to do and how it should be done was viewed as time-consuming by the students, which then led to stress, especially when the time was so tight around the reviews.

The emotions in the design studio are not always low, however; the students identified some periods of time that were very positive, which again is associated with the project phase at that time:

‘Although in the first semester I was really stressed. But then started understanding that if you make yourself stressful you’re never going to be able to do anything. You just have to do what you can because you can’t do everything at the same time.’ (Design studio 1 Focus Group, University of Sheffield, 2016)

The students who chose architecture and came to do something they liked and expected felt satisfied and content with all the things taking place at the design studio. At the end, they enjoyed what they were doing:

‘Also at the end ...I’m always happy because I’m enjoying myself, and I’m doing something that I like, that’s what I wanted to do. So even though everything that goes on, you actually enjoy yourself so it’s not always a bad thing. You get to enjoy yourself, you get to meet new people, you get to speak to the tutors.’

‘In the afternoon, after you have your final review. Usually if it’s the second project, when you finish it you know that there is going to be another one. But right now, because we’ve done our last project we’re kind of ..., I’m going to spend all the summer without being busy any more’. ‘You feel kind of empty, like, what are you going to do now? It’s finished.’ (Design studio 1 Focus Group, University of Sheffield, 2016)

8.6.3 Status Quo of the Design Studio

The studio spaces in the University of Sheffield are available to the students, where they share the same studio space with students from the second year:

'It is available but it depends if you can find a table, Tuesdays and Fridays are our days, we should be able to find our places. But the rest of the week second-years may have priority and ... and we find the second-year over two tables and we cannot find somewhere in the corner.' (Design studio 1 Focus Group, University of Sheffield, 2016)

This may cause students to prefer to work remotely from their homes, as there are many distractions. They claim that they concentrate more so outside the studios considering its current situation:

'Sometimes in the studio when there are so many people around, it's quite distracting.' (Design studio 1 Focus Group, University of Sheffield, 2016)

At their homes, they feel they are able to concentrate and benefit from more freedom:

'And also I feel like I have more freedom, I can work in my pyjamas or what have you. Whereas in the studio, you need to have a different attitude.' (Design studio 1 Focus Group, University of Sheffield, 2016)

8.6.4 Teaching Policies

There are some rules and policies set out by the tutors and either appreciated from the students, or some that are not liked. This has caused various debates in the focus group, based on students' personal experiences and feelings in these situations.

At the beginning of the design studio, the tutors grouped the students according to their courses, assigning a tutor to each group. This situation was not favoured because of the feelings of being an outsider:

'Being separated by our tutors before studio projects. For me, I did not like it. I didn't really know anyone in the studio and it felt weird for me being there as they were two big groups, one for landscaping and one for engineering, and no architects in there and it was very weird.' (Design studio 1 Focus Group, University of Sheffield, 2016)

Alternatively, it could have been that the student felt the need to get feedback from other tutors and students:

'I think it would be better if it would be open studio and everyone could sit where they want and you could get other tutor's opinions as well, even though they're not running your project. You get the main two tutors that help you with the design, and if you get somebody else's it would be perfect.' (Design studio 1 Focus Group, University of Sheffield, 2016)

The students work for tutorials with one tutor, but every time they talk to another tutor, they discover another perspective, which further encourages them to try to achieve a solution for the problem at hand, which makes them try to speak with as many tutors as possible. In other words, assigning one tutor to a group for feedback was not enough for them. They said that, after the interim reviews, they ended up with more and more points that were not covered by their tutor, and therefore feel obligated to incorporate that feedback for their final review. This caused them to feel stressed about missing out on more points.

Other students disagreed with those students who were not happy with the groupings and tutors being assigned to one group:

'No, I don't like that because hearing different opinions from different tutors just gives more feedback. For the first semesters, I tried to speak to at least four tutors, and they all told me different things. So I was left not knowing [what to do].' (Design studio 1 Focus Group, University of Sheffield, 2016)

The studio pedagogy is based on tutors giving their opinion and working with guidance, with the student then able to choose whether or not to take the feedback or go on with what they think would be best for their project. In this regard, the role of the tutor was not fully understood by the students. When looking to define the role, they answered the following:

'They still get their opinions in there, though. You can't possibly do it without being objective.'

'What I learned is that you can't make all the tutors happy. One will tell you to do this and one will tell you to do that. So then you have to choose your own points in between both tutors. You can't please both at the same time.'

'That can happen, you have your own idea, you have your own concept in your first design, but then the tutors influence you so much that at the end of the design process the idea is implausible.' (Design studio 1 Focus Group, University of Sheffield, 2016)

8.6.5 Peer Learning

Working in the design studio is an approach adopted by students to be around their peers for various reasons. One of the reasons is to allow for comparisons to be made between their work and that of others, which then enhanced the standards of the work outcomes.

'... because you've had the chance to know and talk with your tutors and colleagues which can be really helpful and you can look at what work they do and see what the standard is that you should be working at.'

Another student confirms this by saying,

'Because if you're at home just in your room then you don't have access to the different standards of work, you might think your work is the best or something but then at the end people are going to talk to you and you'll see everyone else's, and see that maybe your work is not the best. So being in the studio in terms of learning from other people helps you to develop and be better.' (Design studio 1 Focus Group, University of Sheffield, 2016)

The learning from peers is not exclusive to learning from the same year group; for the first year, the allocated design studio days were Tuesdays and Fridays. Nonetheless, the students tended to pop in on the other days as well:

'I kind of like how when you come in on different days the second years are actually working with the second year students.'

'I mean for me, the first semesters when we came in, the teachers from the second year told me I wasn't meant to be here. I used to sneak in and try to find a space.'

'This one (concept phase), I prefer to work in the studio, and of course I get the chance to talk to second years, ask question.'

'I get to talk to second-years and ask them questions. I get to see other people's work in my group. And you see how hard they work. If I'm at home I just get distracted by videos, flat mates, so I don't work much at home, and there's not enough space for me.' (Design studio 1 Focus Group, University of Sheffield, 2016)

This has been clearly illustrated in the students' drawings as to show the need for the proximity of different year groups design studios (Figure 8-5).



Figure 8 - 5 One of the first year students' illustration showing the proximity of the design studios of different year groups. Source: Author

8.6.6 University Policy—Out of Hours

The University of Sheffield studios are open, in the main, 24/7, and offer an out-of-hours policy that is applied to certain times of the year, albeit notably at the discretion of the head of school and the estates who staff the building during such periods. The students

are very happy with this as the hours allow them to access the studios at times where there is no crowding and they still can work:

'For me I really like it. The first semester we couldn't get 24 hours, so we had to go at 9 o'clock. From the second we go every day, we stay, work, go home and sleep, and then come back and work.'

'I usually come in, do my work, and then leave my stuff here, and go and do whatever, come back here, put my stuff in the locker and then go home. And then come back in the morning.' (Design studio 1 Focus Group, University of Sheffield, 2016)

This policy presents a solution for those students who cannot work from home—especially when most of the students are in shared homes, and rooms are demanded for architecture work:

'...and my room is small so I can't work at home. If I had a big room, I would be at home, but I have a small room. My flat mates are really distracting so I prefer being here in the studio than at home.' (Design studio 1 Focus Group, University of Sheffield, 2016)

8.6.7 Teamwork Misunderstood as Collaboration

Collaboration is a very common theme in the case of the University of Sheffield, although students associate collaboration with group work or teamwork. There is much debate around whether or not work should be done in a group with people with whom they are acquainted and have a friendship, or otherwise with a group of students that are not from their own social networks of student.

The students who thought working in a group of non-friends considered the group to be more efficient in terms of the work done. One student claimed that being 'too friendly' wouldn't work well in group work:

'In a group you work better when you don't hang out outside, because if you're best friends and you go clubbing after the studio, then when you are in the

studio, you're too friendly and you talk about that and you don't work.' (Design studio 1 Focus Group, University of Sheffield, 2016)

The same student felt more productive when assigned to a different group in a different project with students that he didn't have a friendship with:

'When we were assigned to a different group for a project, then we worked really well and be focused on the project because we weren't class-friendly.' (Design studio 1 Focus Group, University of Sheffield, 2016)

Other students think it is best to work with students with whom they shared friendship and interests, with understanding recognised as one important issue when considering teamwork:

'In terms of group collaboration, it was very good for me. If you're in a group of people that you don't know, sometimes they don't understand you, so you end up trying to relate ... interest them in to give you some information. And in the end you get nothing.' (Design studio 1 Focus Group, University of Sheffield, 2016)

The other thing that was identified as potentially compromising group work was not working as a team, where one member of the group was sometimes seen to dominate the rest of the member, and, instead of contributing to the project, caused the students to feel that commands were being made by that person:

'I remember on my first P1, my first project, when we had to design a house for our team-mates, I felt like I was the useless member of the team because the idea for the design came from one person and then this one person directed everyone to do something. It was hard for all of us but it was just one person who designed the house for all of us. So we could do cutting, making the models, and I would kind of feel left out because I would just sort of stare at them and not do anything. So I kind of felt really useless working in this group.' (Design studio 1 Focus Group, University of Sheffield, 2016)

In the design process, the students mentioned that they consult with other students to give their opinions on what they were doing. The students opted to consult students who

were friends; the reasons for so doing were various. One reason was that people try to consolidate instead of giving honest feedback:

'When you have someone who you're not that friendly with they would only say good things and not really specific. You might be working and someone who isn't necessarily your friend, comes to see your work and says, 'That's really good'. That's all they say. They don't give feedback. They just give you a general, 'Oh, that's really good', which isn't helpful. But then, if it's your friends, they will give you useful comments.' (Design studio 1 Focus Group, University of Sheffield, 2016)

To counterpart the above, other students felt that all students, whether friends or not, were experiencing things related to their design that would encourage them to give feedback from different perspectives:

'I go to anyone. If I need something I will just go to and speak to someone because when I'm sitting there with the tutors telling them about something that might help me. So I just call in and talked to them, see if I can get some information.' (Design studio 1 Focus Group, University of Sheffield, 2016)

Students were seen to communicate a difficulty sharing their work with each other, whether due to experiencing feelings of shyness or sometimes even a fear of ideas being stolen between students in the same group:

'It was a group project and we're all supposed to a section of the size and one person would do the environmental, but in the end we kept our sections to ourselves because we were shy of other people. So in the end we all had to do all the work even though we did a group project.' (Design studio 1 Focus Group, University of Sheffield, 2016)

Being in a group of students from different specialisations or courses could be beneficial for collaboration and sharing expertise; however, students from different courses did not necessarily prioritise the work in this module over their main modules, which sometimes led to the work being done by other students in order to 'save' their project:

'We had a brief to cover a different subject ... somebody do the environmental, somebody do the landscape, somebody do the sections. The thing is some of them, such as the landscape students, for example, were busy on the day that we were supposed to present so they didn't really pay that much attention to what they had to do.' (Design studio 1 Focus Group, University of Sheffield, 2016)

8.7 MAAD Findings

8.7.1 Project Phase and Emotion

In the MAAD studio, the students felt various emotions—all of which changed in line with the phase of the project. Furthermore, the physical attributes of the space itself were seen to induce changes. Overall, the participants agreed on the fact that the space was not what they expected, particularly in terms of being in different design studios when they were undergraduates.

The beginning of the project began with a brief being provided, with students describing the space during the brief as a noisy space and associating this noise with why they did not follow the brief or understand it so well:

'I think, in the studio, the worst thing was the brief. The brief was totally misleading, and I didn't like [it].'

'I think it was a noisy space.' (Design studio MAAD Focus Group, University of Sheffield, 2016)

8.7.2 Studio Space and International Students

The MAAD studio consisted of entirely international students, the reason for which was owing to the comparison happening across two levels, namely the pedagogy and teaching policies, as well as the physical space of the design studio.

The students claimed they did not have a dedicated studio space, either because it was not enough or because people share the space with them. In the discussion over the Student Designer Engagement Map, students described their dissatisfaction:

'Not having a studio space basically!'

'Yeah, not enough studio space. Those undergrads invading us!'

'We don't have studio space every time.'

'No studio space for overseas' students.'

'All MAAD are international.' (Design studio MAAD Focus Group, University of Sheffield, 2016)

The students then suggested that the problems might arise owing to a lack of students attending the studio during times when there would be no contact with their tutors:

'I think part of the problem is that we didn't work every day in the studio. It kept on changing.' (Design studio MAAD Focus Group, University of Sheffield, 2016)

8.7.3 Movement

Whilst students were in the space, there were a number of spatial problems with the design studio—the fact that the studios were adjacent to each other and located on the four sides of the space was seen to limit students' movement (Figure 8-6). This—and sometimes other students from different years having to pass through one studio to move to another space—was a cause for annoyance amongst the students in the MAAD studio:

'We could say using it as a corridor, they disturb us a lot when we're in lectures.'



Figure 8 - 6 The movement around the design studio that disturbs the students.
Source: Author

When it came to choosing seating in the space depended on when the individuals entered the design studio, as well as the layout of the seating in the lecture, which was in a semi-circle. There was no preference with where to sit, but then there was only one wall in the studio space, and that was usually used for projecting and pinning up, meaning movement in the design studio was limited to that one wall.

8.7.4 *Ownership and Belonging*

The students did not see themselves as a part of the community of the school; there were many factors underpinning such feelings, starting from ownership over the basic desk space and storage. Participants agreed that, if they were to have their own space, they would be available at the studio more often, and further stated that, with the availability of a larger storage area, they could hold their things, which would be ideal, ‘because if I had enough storage and I could keep my stuff most of the year, I would come here every day. Because then you don’t have to carry everything every day’.

8.7.5 *Furniture*

The furniture was seen to have an impact on the students of the MAAD studio. The students voiced a number of complaints in regards furniture shape, type, height and/or quantity. The students claimed that the furniture was not convenient for the purpose of a design studio.

Students further claimed that the partitioning system between desks was too high, preventing the students from seeing or interacting with one another. The chairs were also highlighted as uncomfortable for the purpose of the space—‘The chairs are really painful!’ Furthermore, the fact that the tables were not adequate enough for the students in terms of space, and were ‘not architectural working tables, but just tables’, meant that the space was not a design studio; rather, ‘it’s just space. A table and a chair, that’s it.’

The status of the design studio and maintenance was not in the best shape, with the students expressing their anger in this regard, with the studio not viewed as clean:

'And at points, it was so dirty. I don't think they even cleaned it.'

8.7.6 Environmental Control

In regards the environmental control in the MAAD design studio, most of the time, the preference to carry out a task would be limited by where the radiator was located:

'It gets very cold in the winter.'

'Because I'm reading, for example, I prefer to sit beside the window so I'm just having a nice view. Or because I'm working for long, however, sitting here, because there is radiator.' (Design studio MAAD Focus Group, University of Sheffield, 2016)

Sitting next to the radiator in the winter has its cons, as the radiator is on and it's exposed, and so being next to it would heat the feet but not the upper part of the body, which, in the students' opinion, could lead to them being sick.

In the summer, or when it was sunny, there would be another problem in the lack of radiator; the sun would be shining, and that would cause a glare problem, especially when working on the laptops. The sun would also heat the space, with the space consisting of only two façades of glass wall:

'For me, I used to sit near the partition because it was warm during winter because the windows are a bit cold. But then, later on in summer, I prefer to be near the windows.' (Design studio MAAD Focus Group, University of Sheffield, 2016)

One of the participants commented on the space being unpredictable, whilst another stated:

'I didn't like the contrast in the heating and cold.' (Design studio MAAD Focus Group, University of Sheffield, 2016)

8.7.7 *Field Trip Visit*

The Field trip visit is learning beyond the design studio, but it is a very important phase that contributes directly to the work being done within the design studio space. Being on a field trip in regards the project is considered beneficial, although the students had a difficult time establishing what was important to focus on whilst at the site, especially when it was in another country. The fact that the assignment was to take pictures and document the site and its context was difficult when they did not fully understand the brief. Importantly, this was highlighted as limiting the ability to perform the task:

'You go directly to the field trip, you have no idea what is going to happen, you have no plan, no strategy on what you have to collect information about. After you come back you realise, you don't have this, or you don't have that.'

'Because your site analysis comes directly after research. You do a little background research and then you go to site. You have no idea what you are doing personally, or what information you will need.' (Design studio MAAD Focus Group, University of Sheffield, 2016)

Spaces were limited in the hotel or the accommodation in the field trip; thus, the students found it difficult to do work. Although no work was needed, they felt that they were not able to map the space properly because of the lack of space to work.

'And the field trip, we're not working here so we can't do drawing and stuff.'

'We took a lot of pictures but did not do proper mapping and when we came here we had trouble mapping the site.'

'One of the pinpoints during the field trip was that there was no proper space to work.' (Design studio MAAD Focus Group, University of Sheffield, 2016)

One of the students considered that all of these difficulties and obstacles during the field trip, combined with the lack of space to work, made the field trip:

'I think that's just part of the field trip experience.' (Design studio MAAD Focus Group, University of Sheffield, 2016)

8.7.8 Peer Pressure

Students considered that, if the studio was being used by other students, it would be an encouraging environment for them to attend and work in the design studio, and to feel the peer pressure:

'We can even say that because not everyone comes to the studio you don't feel like working. So at least that if there were ten people coming and working, you feel like coming and working.'

'I just work better because there is someone.'

'You have an atmosphere that everybody is working.' (Design studio MAAD Focus Group, University of Sheffield, 2016)

And when the status of the design studio was as empty as it was, the students stated that they felt that the space itself was discouraging them from working:

'This space is not utilised by the students. It's demotivating.' (Design studio MAAD Focus Group, University of Sheffield, 2016)

8.7.9 Power Access

The studio was highlighted as lacking power points for students to use; they found it difficult to work on their devices where there were so few power points (Figure 8-7), and so they tended to gather on one side of the design studio because it was the side with availability:

'...nobody uses it because all the tables are here because plug points are only there.'

'The plugs don't work.' (Design studio MAAD Focus Group, University of Sheffield, 2016)



Figure 8 - 7 The MAAD design studio, and the use of Laptops which cause shortage in the power outlets. Source: Author

8.7.10 Spying

During tutorials, the tutors asked the students to pin-up their work and discuss with the other students the work of that student. The participants found that this act encouraged some students to replicate and copy their ideas; this was special to this case, although the notion in spying is present in most of the cases towards the last phases of the projects, where everyone gets protective and works individually, in this case, students tended to only pin-up when they were told to do so by their tutors. They also found the space to be lacking in privacy, with the screens visible to others. Furthermore, when the students had one-to-one tutorials, they could clearly hear the comments being given to the student:

'This is why, when we're overcrowded in that space, everyone can see each other's screens, and if the tutor is there we can hear her giving comments and sometimes they're very similar to yours.' (Design studio MAAD Focus Group, University of Sheffield, 2016)

Amongst themselves, students trusted their friends to give opinions and feedback. However, they believed they could trust nobody else. Trust was a clear issue. Even when the asked to collaborate and share their data with others, they tended not to obey.

'The thing is, at least in our studio, what is happening is our tutors say that everybody should share everything but nobody does. Like, when we had gone on

field trip she told me very clearly just put all the pictures on Google drive so everybody has access to pictures. You're not doing anything, they're pictures. But nobody has put them on Google drive. I think (A) wanted a few pictures on the market right now, and she asked (B) can you just put it on Google drive (B) asked her what kind of pictures she wanted, (A) just told her what she wanted, and (B) actually just picked up the picture mailed them to her. It's like people are very possessive about stuff they can share.' (Design studio MAAD Focus Group, University of Sheffield, 2016)

It is different in the matter of group work, as the grade is similar to other students in the same group, which leads to forced collaboration and sharing:

'The first semester we were doing group work in my studio so we used to share everything because we had to submit group work, and so we had to share because you could have the same grade as that person. So if you don't share, you're going to lose grades yourself.' (Design studio MAAD Focus Group, University of Sheffield, 2016)

The students disagreed if it came down to a matter of competitiveness, or whether the students just did not like to 'share'. The students argued that being at the University of Sheffield, with the motto 'We are International', means that, by being enrolled there, expertise and skills would be shared by their students and that that would be a part of their experience in learning at an international university. However, this is not the case:

'Technically, we are all international pupils, so technically we have so much to share with each other so you learn so many different things but nobody really does so.' (Design studio MAAD Focus Group, University of Sheffield, 2016)

8.7.11 Overall Feelings:

The participants gave the overall feeling of the space and sought to describe it in words and to justify the feelings:

'I don't think I like the structure. The vibe it gives is very cold.'

Other students stated:

'It's very formal. It lacks a little informality, for me'.

'I was feeling really bad there. And there were spaces that were not friendly.'

One of the students thought that the space itself caused her to feel isolated:

'I don't know, the studio space for me feels very isolated.'

Another student agreed:

'Isolated and segregated, basically.'

Students felt that the space and course, coupled with being international students, contributed to such an experience:

'It's like, you're the MAAD students, just stay in the spaces you're given and don't go anywhere else.'

Other MArch students⁴ were seen not to welcome those specific students:

'Did you see how those people were looking at us when you were going for your reviews?' (Design studio MAAD Focus Group, University of Sheffield, 2016)

⁴ Not the MAAD students, but the MArch students as detailed in the beginning of the case study.

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graph TD; A[ ] --> MAAD; A --> FY[First Year]; MAAD --- MAAD_traits[all international, noisy, not what they expected]; FY --- FY_traits[in depth, participant, observant];
```

MAAD

- ✳ all international
- ➔ noisy
- ✚ not what they expected

First Year

- ✳ in depth
- ✚ participant
- ✳ observant

The University of Sheffield
design studios
Before

appreciated freedom developing
flexibility changing
belonging ownership

A mind map diagram centered on a stick figure, with branches listing various items and concepts. The items include:

- Honest thermostat control
- ergonomic chair & desk
- ergonomic table
- ergonomic chair
- Sleep nap
- Energy - helps off - helps on
- Food & snack
- Stitch board
- Access 24/7
- Tracing board - "right" crafting mat
- primary's Scavenger
- Learning new from colleagues
- Intuitive "good-better" - descriptive food logs from new colleagues
- ergonomic table, chair, desk, stool (circled in red)

- ✧ in depth
- ✧ participant
- ✧ observant

24/7 not guranteed

spaces with proximent adjacencies

Sheet 4

"Space constantly encompasses our being. Through the volume of space, we move, see forms, hear sounds, feel breezes, smell the fragrances of a flower garden in bloom. It is a material substance like wood or stone. Yet it is an inherently formless vapor. Its visual form, its dimensions and scale, the quality of its light—all of these qualities depend on our perception of the spatial boundaries defined by elements of form. As space begins to be captured, enclosed, molded, and organized by the elements of mass, architecture comes into being".

Francis D. Ching

Nine

CHAPTER 9: ANALYSIS

9.1 Introduction

In this chapter, the first section will provide a discussion regarding the methods used in analysing the data, with consideration directed towards how business/design methods and the background of the researcher can generate visual data for use and consideration in research, borrowing the methods that can be adapted to the use of this research. In addition, the role of the researcher in the translation of this collected data is considered, as well as how such data can be filtered to extract the evidence from the case studies and literature.

The second section will focus on compare the findings from the case studies with the literature, and in providing insight into how the researcher interpreted each theme. There will be a discussion relating to what has been found from the case studies and the literature. There will also be various enquiries made in regards the educational literature and that focused on environmental behaviours.

In line with the data generated from the case studies, another round of exploring where the studies reach regarding the built environment and its influence on behaviour will be considered, which will then inform the phase of analysing and interpreting the data collected.

The themes generated from the case studies are those that have been introduced and explored in the literature review. These themes are related to the built environment of the design studio, and the notions of its claims in regards impacting the behaviours of the users of the design studio.

Through section 9.6, the discussion will be on the proposed framework, starting with a literature review around the main theories that discuss perceiving space practically. Then in the same section, an illustration for the proposed framework that suggests considering emotions as a way to perceive space.

On section 9.7, a list of propositional guidelines derived from the findings and the literature of this research. And in the last section, 9.8, there will be a comparison

between one of the independent bodies that review architectural education and higher education students' experiences and between the notion of experience found within this research.

9.2 Designing Analysis Methods

Following the data collection, there will be the analysis of these data, which plays a huge part in terms of putting the research in its discourse; this will witness everything come together ready for the researcher to interpret the findings. As the data is so varied and different, it warranted attention to each and every type of data acquired; this requires a special technique of analysis to bring out the data to information.

There are two primary data gathered in the research: visual data, such as that encompassing the drawings of the students, the Student Designer Engagement Map and photos taken of the design studios visited; and the audio data, which was transcribed, notably the interviews and discussion over the Student Designer Engagement Map. Throughout the course of this analysis, the researcher adopted many different roles in analysing and underpinning the data at hand. Each data needed to be seen through multiple lenses. Furthermore, in order to fully utilise the data at hand, the researcher interpreted data through gathering all experiences and backgrounds in order to generate a holistic view.

9.3 Analysing Visual Media

The majority of the data in this research are in the form of visuals. Although they are backed-up with discussions, visuals and images holds limited 'affordances' or possibilities for the eye of the researcher to interpret and analyse (Rose, 2016:8). The way in which what the images are offering, in this sense, differ for the researcher in terms of making verifications or dismissals according to the research question. Sometime, what the images can communicate opens new opportunities for the researcher to address and enquire. Owing to the fact that the visual media gathered are varied in their sources—whether they were from the same type (e.g., images of building, drawings

of the same topic), and even from the same source—can mean they are considered different. To give an example, the drawings collected from students are varied and are inconsistent as they have been created by different students, all of whom have different technical drawing abilities and perspectives on how their ideas can be communicated. The drawings also differ in terms of their approach in graphical representation; sometimes, showing a plan of the optimum design studio and sometimes showing a perspective of an area of interest.

It would be almost an injustice to establish one way of analysing and interpreting all of the visual artefacts, and treating them all in the same way. In this sense, the researcher put on the tutor hat as well as the hat of the interpreter. The tutor, in essence, excels in the exercise of reviewing students by the use of drawings and representations, whilst also understanding their messages through drawings. In the role of the interpreter, the messages of all data are interpreted communicated in the form of this research. In this sense, the researcher considers the visuals by using big titles ‘subjects’ and then underpinning the image at hand in the theme of the title (Discourse Analysis). In mind of easily returning to those themes and then identifying them, the researcher designed pictograms on each subject. Another way of completing analysis, as used in this research and found useful when analysing visual data, was the use of design basics in the interior design context), in line with the work of Ching (2004; 2007) referencing design principals and interpreting how these affect the users of the space.

9.3.1 Discourse Analysis

Discourse refers to ‘groups of statements that structure the way a thing is thought, and the way we act on the basis of that thinking’ (Rose, 2016:187); this may infer the knowledge about the subject at hand, as possessed by the researcher, which acts as the drive constructing the decisions and judgements regarding the way in which the matter can be understood. Where discourse involves subjects related to it, the intertextuality of the discourse means that data is not singular in terms of giving meaning, but rather depends on the other data in articulating a meaning (Rose, 2016).

Discourse in Visual Research:

In this research, the discourse is the architectural education. Subjects are architecture and interior design, users' behaviour, and space. The researcher initially collectively devised themes within these those subjects, spanning from the pilot study and the first case study. Subsequently, this has created a base for the rest of the case studies, which then have been built upon when progressing through the research.

Looking at the data at hand and the research questions in mind, the data revolved around the physical environment's control of the studio; this includes the layout of the design studio at hand. There are also recurring themes of how things cluster in regards the social interaction of the users within the design studio. Furthermore, last but not least, other segments of data revolve around the actions taking place in the design studio.

Thus, these themes have been divided into three categories, namely the social aspects, the functions, and the environmental control aspects. The data also highlighted various phases in line with the project at hand and the tasks involved. Furthermore, the students referred to their emotions regarding what is happening around them, always associating these emotions with the phase of the project and the state of the design studio. This notably fell in line with the hypothesis of the research question.

9.3.2 Design Principals and Spatial Organisation

In basic design, the idea underpinning having elements and principals is to formulate language with which designers can communicate. Ching argued that, in design, knowing design elements, such as point, line, shape, form, space, colour, texture and light, as well as design principles, namely proportion, harmony, rhythm, dominance, emphasis/focal point, balance and unity, is like learning the alphabet, which then facilitates addressing the broader meaning of architecture (Ching, 2004).

Ching claimed that, 'Designers inevitably and instinctively prefigure solutions to the problems they are confronted with, but the depth and range of their design vocabulary influence both their perception of a question and the shaping of its answer. If one's

understanding of a design language is limited, then the range of possible solutions to a problem will also be limited' (Ching, 2004: IX).

Looking at the visuals and deconstructing them in line with basic design elements and spatial organisation helps to be better understood and enables understanding the feeling they communicate to users of a space. Understanding the basic components and the organisation governing all of these components can help to understand the bigger picture.

9.4 Analysis from the Four Case Studies

9.4.1 Themes Concerning Social Aspects in the Design Studio

9.4.1.1 Inhabitation:

Students have been directing their efforts towards inhabiting the design studio, personalising the space, and leaving their own touches—not only on top of their desks or in the working space, but also extending to the walls of the design studio.

In the fifth- and first-year design studios in Northumbria, fifth-year and first-year in Newcastle, and the fifth-year in Plymouth, almost all design studios—where studios are dedicated to the students and not shared at any point—have witnessed students attempting to inhabit the space by many different means (Figures 9-1, 9-2); these include leaving food and commodities on the desks, as well as books and flags, decorating the space, partaking in plantation, and displaying personal photos.



Figure 9 - 1 Food in the design studio as a form of inhabitation and sense of community. Source: Author



Figure 9 - 2 Forms of Inhabitation. Source: Author

Inhabiting design studio is an extension of the fact that students live and work in the space—and maybe as much as they live in their homes. For some, or even most, home is not home; it is a transitional space between their parents' houses and where they will end up living after their university years. This is particularly the case with most universities with international students or home students from other parts of England.

Christopher Jarrett, when setting the context of the social practice in design education, talks about inhabiting the design studio:

'Students retreat from the outside world, literally enclosing themselves in the project, mentally and physically. With a few sheets of plywood and a Walkman, boundaries are constructed in the studio environment – tutors have been known actively to encourage students to set up their studio environment like a home, complete with family photos, bookshelves, a refrigerator and a sleeping bag' (Nicol & Pilling, 2005).

Being able to relate to the idea of spending more than seven hours in one space that has nothing of comfort to those in the space does not appeal to many students. As is known by now, the design studio is the backbone of architectural education (Salama, 2010). Students of architecture spend most of their time in the space; nowadays, however—and as a result of financial and limited availability in spaces—some universities, as shown in the case studies, have afforded a shared studio, which is used by the group of students twice a week. This means they are able to use the space only in a temporary manner, which influences the overall continuity of their work. Even in this case, some of the students in such universities inhabit the space temporarily—specifically, during the timeframe allocated for them. Their time begins with them organising their temporary desk, using a cushion on their chairs, changing their desk direction, and pinning their works up on the wall.

As a point of reference, within the time of this research, the design studios and the school of architecture at the University of Sheffield have been shut down due to an Occupation of the Arts Tower⁵, the occupation was done by mostly non architecture students and the timing was when the students of architecture were working towards reviews. Alternative arrangements have been made to where the studios would be taking place, which mostly were in another University building, tutors own design studios, or in cafes near the University. The Arts tower has been deemed unsafe during that time. The students of architecture whether supportive of the strike or not have had different views regarding this situation, but the majority of students' work have been suspended because they could not access the Arts tower, whether because their work was inside the arts

⁵ An Occupation of vital building in universities across United Kingdom in 2018 have been done in response to a pension dispute between UCU and UUK. Where the Arts Tower Occupation has been done by some students of The University of Sheffield in solidarity with the UCU members in their strike action.

tower and they could not retrieve it, or because they could not get in the facilities, such as the studios and printing etc. The Occupation has shown how important is the design studio to the students of architecture, a student have sum the situation by saying

'Because of your occupation, I would say the chance of the university removing 'out of hours' access between 6pm and 8am is pretty high. This is the resource that the students (not the administrators that you are targeting) need! The building provides the facilities that Landscape and Architecture students need to do their work including those resources that certain students can't afford (so ironically you could be effecting the less well-off students). When you eventually leave your lives will no doubt return to normal. It is us, THE STUDENTS, that will feel these consequences for the months to come' (Sheffield student-worker solidarity, 2018).

It is in a situation like this the students have shown their need for the spaces and the university have been informed of how much this is crucial part in the lives of the architecture students. The design studio is valued from the students for the huge role that it serves during their education.

9.4.1.2 Privacy:

Privacy, in the eyes of the students working in the design studio, changes with the phase of project. Towards the more critical phase of the project, such as reviews, students realise the need for a private workspace, and they acknowledge this in the discussion. Students' drawings for the design studio have shown the need for partitioning in their working stations, with their drawings also show that desks are located at the edges of the room, as well as how desktop computer are organised in a manner that provides shelter and protection for what they are working on (Figure 9-3).

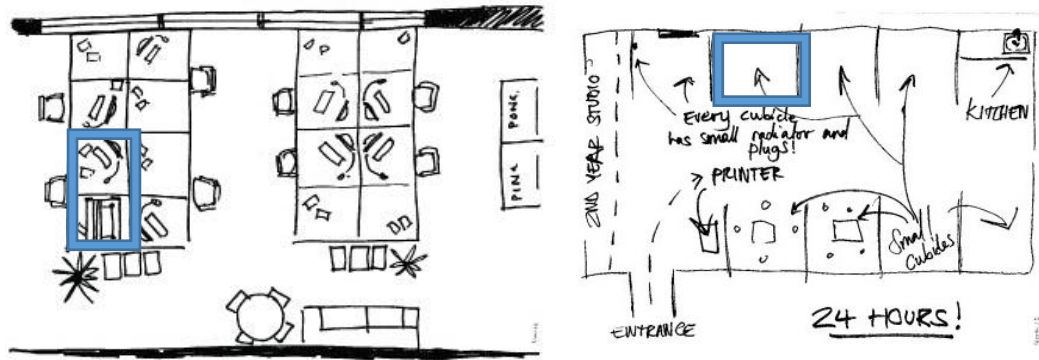


Figure 9 - 3 The emphasis on privacy by placing cubicles and giving the desk space twice the size. Source: Author

On the level of adjacent design studios, students felt that the studio should be accessible to other students, and should be open (Figure 9-4) especially for those students from 'older' years to attend the classroom which has been shown directly in their drawings. But in the case of the MAAD students at the University of Sheffield felt that the studio is not private enough for them, and further articulated that poor circulation, as provided by the layout of the Arts Tower building and in which their design studio is located, caused them to feel exposed to other students. The effect was a feeling of being invaded in their personal or territorial space, especially when their boundaries were constantly unseen and overrun.

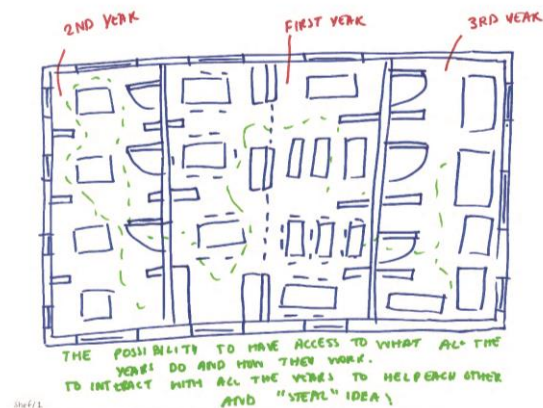


Figure 9 - 4 The 3 years design studios could move around freely between their design studios. Source: Author

‘One implication of the arousal elicited by personal-space invasions its effect on task performance’ (Bell *et al.*, 2011:271). In this regard, students felt it was very hard to work in the design studio space that is constantly exposed to other students (Figure 9-5). They changed their working times or their place of work so as to avoid rush hours. Such students felt that the design studio is not the place to work as it lacks the privacy of the group as a whole; being passed by students that move between studios all the time and using their design studio as a corridor. When it came to inside the design studio, however, the high partitions between the desks prevented them from socialising with one another, which was not seen as an advantage when considering the privacy they were looking for.



Figure 9 - 5 Lack of privacy in the MAAD Design studio. Source: Author

The feeling of invasion that the Masters students felt with regards the spaces and reviews could be related to how they felt about their course and the attitude of others towards them. This might be because they are outsiders from the group, purely owing to

their international student status and not being ‘home’ students. In many cases, this was highlighted by the subjects, with other Masters students treating them as outsiders.

It is notable that the students that do not own the design studio, with their time limited and them experiencing issues with privacy. Privacy in those studios that were dedicated to students for the whole year was not as significantly affected by this issue to such a great extent. Nonetheless, there was the presence of ‘the nest’ in Newcastle University fifth-year design studio, as tutorials were held in that space, which provided students with some privacy, as opposed to the fifth-years at the University of Sheffield, where students felt that their work was replicated because tutorials has been taking place very openly, meaning comments were heard by everyone in the studio due to the poor acoustics in the Arts tower.

The view of privacy became entangled with other themes, especially that of peer pressure, where students felt unsure; however, the students agreed that, by being in the same space as their peers, they felt motivated to work; however, there should be some form of private space that would allow them to work freely.

Privacy was also associated with trust. The need for privacy increased when students discussed relations between themselves and outsiders, or students that they do not trust within their group, where the privacy was not an issue when they were with their friends.

9.4.1.3 Peer Pressure:

Being around peers was recognised as very positive to the process of learning in the design studio. Students recognised that being in the space with their peers was helpful in motivating them to work. Some of the students further stated it was very productive to be around people who do the same work as they do—referred to as ‘being in one boat’.

The point was made that all design studios have been seen in the cases studies, where the students forced themselves to physically be at the design studio, although their minds were shutting down the social interactions happening around them with the use of headsets, and by focusing on the screens in front of them.

A lack of peer pressure was recognised as apparent when the studio space was not provided more frequently for students, with students admitting that they aspired for such a notion and wished that more students would use the space so that they could feel motivated to work (refer to the University of Sheffield MAAD Studio). This particular case was due to the fact that the design studio is not available for the students, but rather is used by other students. Thus, some students opted to work remotely, which compromised the presence of the students in the space. The other reason, in this case, was that there was not enough desk space to be used by all students in the group.

Students also used being around their peers to measure their own work according to others, finding being away from the studio space deceptive in setting standards and could then give them false reassurances or vice versa (Figure 9-6).



Figure 9 - 6 Office like atmosphere at the fifth year design studio at the University of Northumbria. Source: Author

In regards the privacy theme, trust was therefore found to play a crucial role in the preference to be in a space around certain people.

9.4.1.4 Community:

A sense of community in the design studio is easily seen through observation, with the students working in and inhabiting the space together. The roles are clear and the goals were set. The students have their own unspoken, unwritten code of standards in regard to how the space is inhabited by them and others. In a case of MAAD design studio, were the students' felt outsiders and no sense of belonging, the sense of community did not exist. There are many aspects that the community were enhanced by the university and the tutors, and there have been measures to protect this formation of the students. The university of Newcastle encouraged the students interacting with other students in the school beyond their design studios in the collaborating project at the beginning of the academic year. Within the design studio boundaries there have been some measures of inclusivity, pinning the students' photos on the wall as a way of introducing the students to each other, and an easy, simple way of identifying them without embarrassment and discomfiture. The photos also can help the students feel the belonging to the space, and the university, thus the community as well.

9.4.1.5 Safe Space:

Looking at home as a safe space, home consists of familiarity, in-spatial configuration, and familiarity in faces, and familiarity in the tasks performed in the space, with such familiarity leading to the design studio as a safe space for students—especially when the space belongs to the student.

The notion of the studio being a safe place for the students came from the long hours they would spend in it, with familiar people staying all day and all week. This allowed the students to work freely without being judged, and finding understanding and sympathy amongst others students due to sharing concerns, obstacles and working habits.

The studio, as a safe space, was very obvious in the case of Plymouth, with owning the space, working in harmony, effortlessly understanding each other and respecting and acknowledging their differences, and perceiving the design studio as a shelter all recognised. In the case of the MAAD studio at the University of Sheffield, the opposite

was found to be true. This is not a comparison; rather, the investigation into why the students of the University of Plymouth consider the studio to be a safe place where students from Sheffield do not. This might relate to the fact that the first the studio—that in Plymouth—is recognised as a secure space, and consists of all the facilities a student might need to keep their day going, such as some pantries, for example, alongside the different arrangements in available seating and the fact that each student can own a desk space allow the students to work in harmony together and share their skills and expertise. Limiting their time in the studio, however, was important to some of the students, although this did not put them off the idea of the design studio as being a safe space. All of these are missing factors in the Design Studio at the University of Sheffield.

9.4.1.6 Ownership and Belonging:

Ownership and Belonging is a theme that was seen to have reoccurred many times and came up in many investigations. In regards many related themes, such as inhabitation, safe space, community and privacy, students were found to have a sense of belonging to the space, which led them to come up with this sort of theme. Ownership starts from owning their desk space and possessing control of the physical spatial configuration (9-7), as they have permission to change, use and control the space. As such, the sense of belonging appears. On the other hand, it could be that the students felt belonging to the space and thus took ownership over it.

In any case, it is up to the university to facilitate such feelings, starting by empowering the students to take over the space, and giving them privacy, belonging and ownership, whilst also prioritising increasing their sense of community and thereby allowing them to have their own safe space to freely create and resolve their own obstacles.



Figure 9 - 7 Photos of students on the entrance of the design studio at the university of Newcastle. Source: Author

9.4.2 Themes Concerning Environmental Control within the Design Studio

9.4.2.1 Lighting:

Lighting has an effect on the students in the design studio, whether through artificial lighting that is in the space or otherwise through the openings that allow natural light to filter into the design studio.

To benefit from natural lighting, many students gather around the windows for the views of the outside of the building. Unfortunately, however, the windows ledges are stuffed with old models and materials (Figure 9-8), which do not allow the students to fully benefit from the natural light entering the design studio.



Figure 9 - 8 The light from the screen outside at Plymouth University and the ledges that are used for storing. Source: Author

Moreover, there is the fact that, in most if not all of the students' drawings, the working spaces, such as desks, are arranged next to the windows. Importantly, studies examining lighting and natural lighting in working spaces have not shown increments in performance when people work near windows (refer to chapter 3. Section 3.5.2), and so it is likely to be that it is merely a preference for students to be working next to the windows. The natural lighting in the design studio causes difficulties, such as glare and reduced clarity, when there is a lecture or when information is projected onto the wall. The problem is not the lack of blinds, but rather the shape of the blinds and the shape of the window ledges, which affect the operation of the blinds (Figures 9-9 and 9-10).



Figure 9 - 9 items on the ledges of the windows that prevent the blinds from closing at the Northumbria University Design studio. Source: Author



Figure 9 - 10 The items on the ledges of the windows that prevent the blinds from closing at the Newcastle University Design studio. Source: Author

As for artificial lighting, most of the studios in the case studies are equipped with fluorescent bars; however, the students complained that the lighting is not well aligned with the tasks performed within the design studio (Figure 9-11). The glare and shadow hinder the overall quality of their drawings. The surface material does not work well

with this type of lighting, and there is a need for more appropriate professional lighting for the students.



Figure 9 - 11 The artificial lighting not designed to be over the working surfaces at the University of Northumbria. Source: Author

As a final point in this regard, the lighting available at the design studio is not controllable, whether relating to natural lighting or a blinds issue. The ability of the students to control the intensity of lighting and its direction, to match the task that is carried on at that time is essential especially at space like design studio and the very specific, technical tasks and activities.

9.4.2.2 Acoustics:

Most of the studios seen in the case studies are suffering from poor acoustics. This problem reaches its peak at the tutorial sessions, which then impact on many feelings and social issues that take place in the design studio.

The poor acoustics in the design studio have took some of the critical activities that took place in the design studio to other parts of the university, and that hinder the learning and teaching processes for the students and tutors. As seen in the university of Northumbria, due to the poor acoustics in the design studios, students and tutors moved the tutorials to take place in The zone. resulting in lack of concentration and the ability to work properly. In the case of the fifth year design studio in Newcastle, the availability

of The Nest has allowed the tutorials to go without interruption which was appreciated by the users.

Another case where the poor acoustics and the confined space, like the MAAD studio in the University of Sheffield, produced some issues like replicating work and spying between students, not focusing and annoyance, as the tutorials are taking a place where the conversation between the tutor and the student reach the other students in the same place, causing annoyance and disturbance to the students who are not in the tutorial group, and that led to other serious issues like lack of trust, and lack of collaboration amongst students which ultimately affected the community within the design studio.

In the literature, the poor acoustics in a space leads to many health and mental health issues, especially when the exposure for these noise sources or consequences, such as echo or reverberation for a long time, as the time spent in the design studio. According to the case studies visited, the consequences of the poor acoustics in the design studio have extended to touch the social behaviour. These social behaviours mentioned like stress, attention-narrow, and arousing (Bell *et al.*, 2001). The social behaviours that has been influenced in the design studio because of the poor acoustics design are extended to include an interpersonal behaviour which is trust.

9.4.2.3 HVAC:

Due to the instability of the climate control in some of the design studios that have been seen in the cases studies at this research, students felt the need to change their locations many times to avoid the excessive exposure to the heat or cold. Or they were seeking the heating through the radiators in the cold days. Especially in the Arts Tower, the home of the school of Architecture at the University of Sheffield (Figure 9-12).

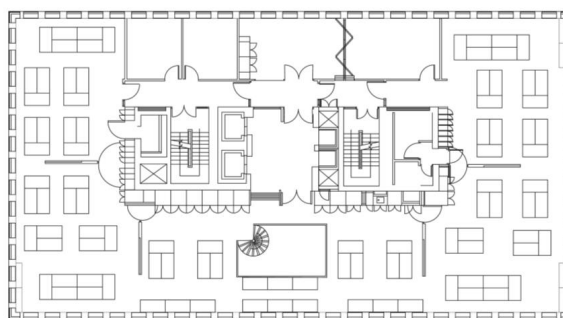


Figure 9 - 12 The Arts tower plan showing the curtain walls all over the facade. Source: Author

Where all the facades of the arts tower are completely curtain walls, with the radiators located below the windows on the parameters of the space, being close to the radiator in the winter as seeking heat, but because the radiator is exposed, and located in the lower part of the wall, hence, heating the students' feet, which can make them ill. In the case of Plymouth, like the case of University of Sheffield, and extra radiators are required (Figure 9-13). The contrast between hot and cold through the day makes it hard for the students to focus and to concentrate in tasks and activities taking place in the design studio.



Figure 9 - 13 The stand alone radiator, extra heat source at the Plymouth University. Source: Author

Ventilation has its impact on the wellbeing of the students, being able to control the ways of ventilation, whether naturally or mechanically to the preference of the users of the space. Providing this choice can customise their experience and offer them the option to deal with any situation at the time, but restricts users to one way of freshening the space, in the case of Plymouth University, where the design of the building depends entirely on mechanical ventilation, and the windows are designed as fixed windows where users of the space cannot open them entirely. In contrast to the similar building (in the fact that it is multi storeys and the location of the studios) at the University of Sheffield, the fifty years old building, the windows can be opened to allow fresh air and natural ventilation. This has been clearly shown in the students' illustration of their

design studios (Figures 9-14 and 9-15) , the ability to move around and access the studio surroundings, and the most importantly, the ability to open the windows.

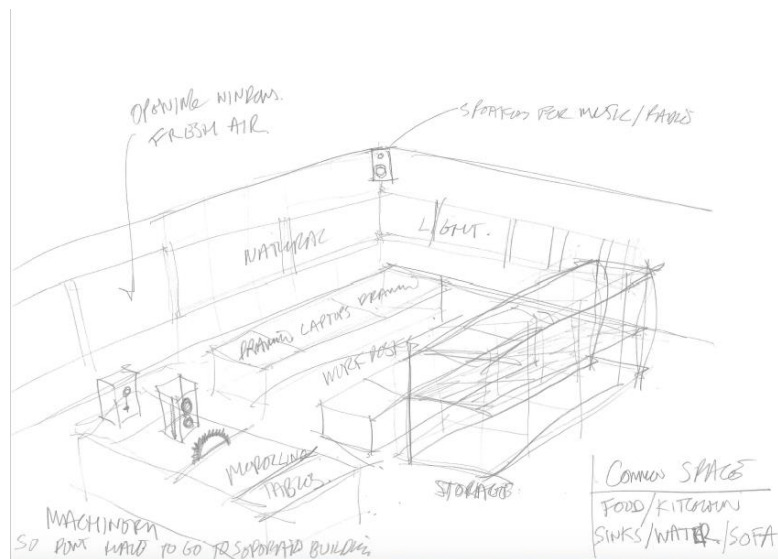
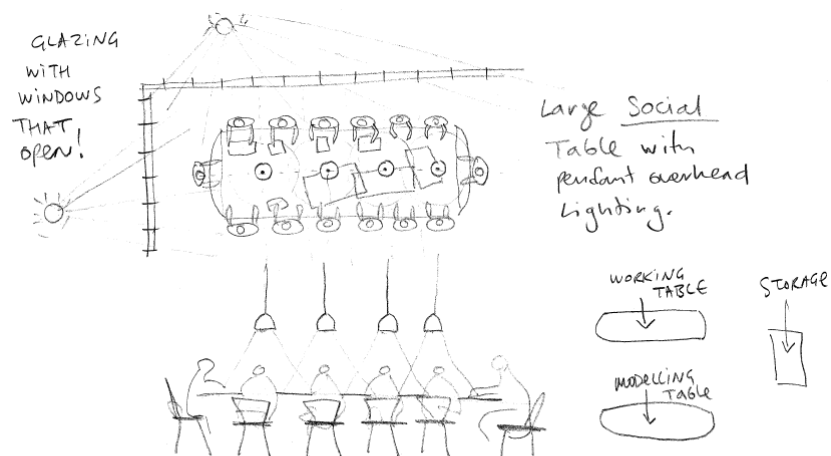


Figure 9 - 14 Student's drawing showing the need of open able window at Plymouth University. Source: Author



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Figure 9 - 15 Student's drawing showing the need of open able window at Plymouth University. Source: Author

9.4.3 Themes Concerning Spatial Organisation and Furniture

9.4.3.1 Layout:

The layout of the design studio is based on students, who agreed on the zoning of activities and furniture. Most of the layouts consist of clear grid circulation, and central collaborative activity, where the workspaces and the more private desks are surrounding the edges and the parameters of the space in a radial form from the collaborative or team space (Figure 9-16).

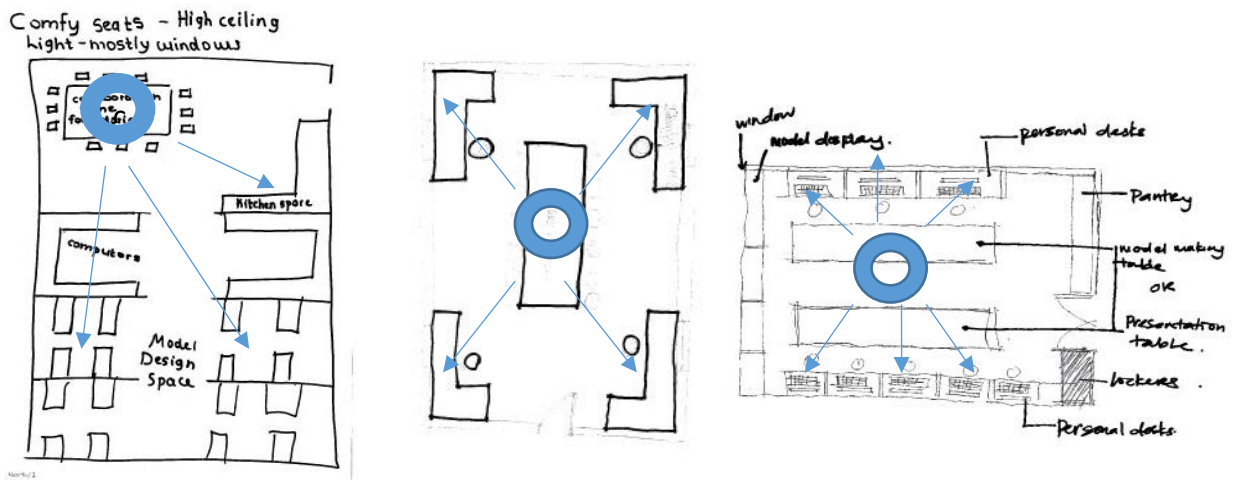


Figure 9 - 16 Some of the illustrations of the students for their optimum design studio, showing almost the same layout, consisting of collaborative central space, and the work spaces are in a radial manner. Source: Author

The other layout found within the drawings is the classroom type, where the focus of the working spaces is towards a focus point. This emphasis has been given to either a collaborative or social space, or just towards a focus element such as curtain wall that opens towards nature (Figure 9-17).

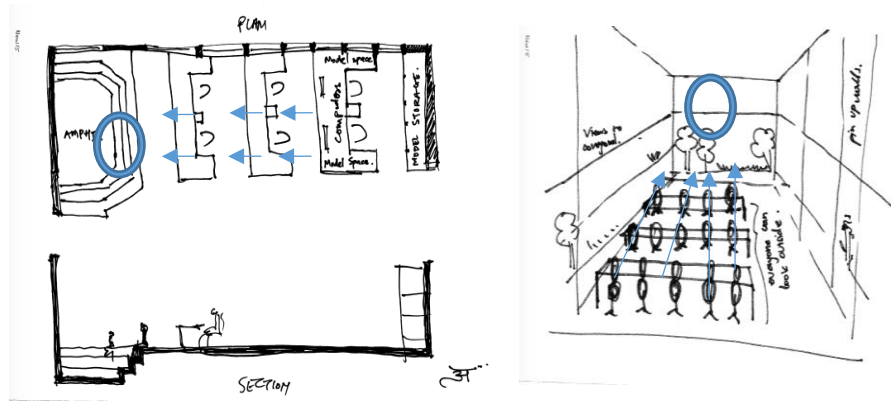


Figure 9 - 17 Some of the illustrations of the students for their optimum design studio, showing almost the same layout, consisting of collaborative central space, and the work spaces are in a radial manner. Source: Author

Looking at the layout of the space itself, some of the drawings showed the need of adjacent spaces other than the main design studio, these spaces holds different activities like printing and copying facilities, and research zone, or have no activity at all, such in quite zone. The adjacent spaces do not give more weight to an activity over the other, although it is still give the power to the bigger activity space which is the working space of the design studio (Figure 9-18).

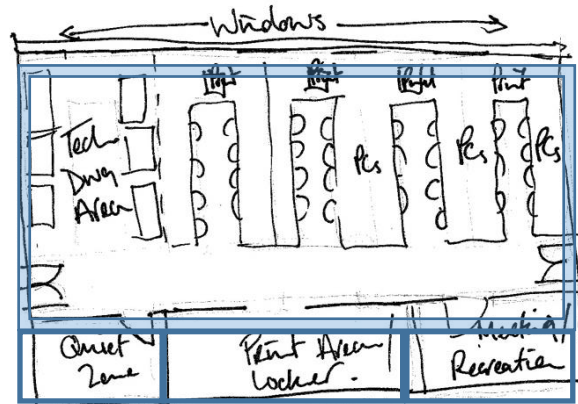


Figure 9 - 18 Adjacent spaces as suggested by a student for the main area of the design studio. Source: Author

The centrality in the studio and the other spaces that are needed in the design studio are present, where the central part is a public space, in this example. The other spaces suggested by the student were gallery and exhibition. This is an indication of the need for the students to be close to the public and to be able to merge the learning and being able to work with the community and the crowd (Figure 9-19), especially that this work is done by a student in Plymouth University, where the design studio is located at the ninth floor.

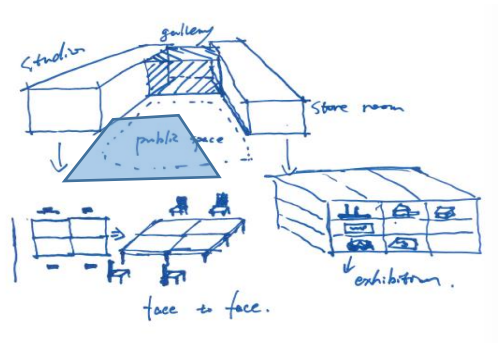


Figure 9 - 19 A design studio with public central space, and exhibition. By a student from the University of Plymouth. Source: Author

9.4.3.2 Interaction with Surroundings:

The other drawings were out of the box designs, the students designed a complete standing building, instead of studio that is part of a building, with the focus of the surroundings. The students emphasised that the design studio have to have an access to the outside. Nature elements emerged in many of these examples. The feel of changing scenery, yet still feeling that it's a part of the building or the design studio appeals to the students. Although, this has been reoccurring in most of the case studies, in particular, the case study of the Plymouth University, where the design studio is located on the ninth floor, in confined, with no open able windows, the students who participated in this focus groups, have shown the need for the access to the surrounding. It's also shown that the site of the design studio, needs to be overlooking a natural feature, like a river (Figure 9-20), or within a green space (Figure 9-21).

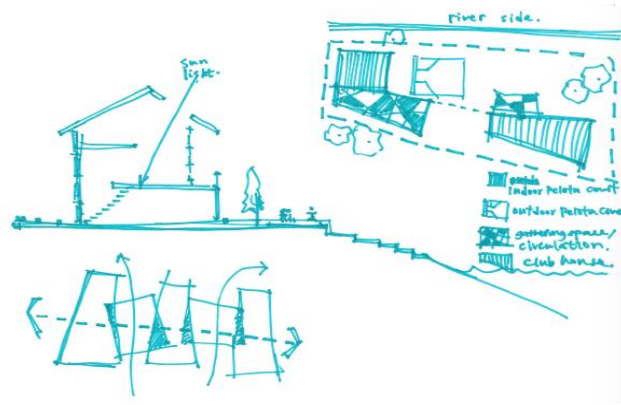


Figure 9 - 20 The design studio built over a riverside, as an illustration of student in Plymouth University. Source: Author

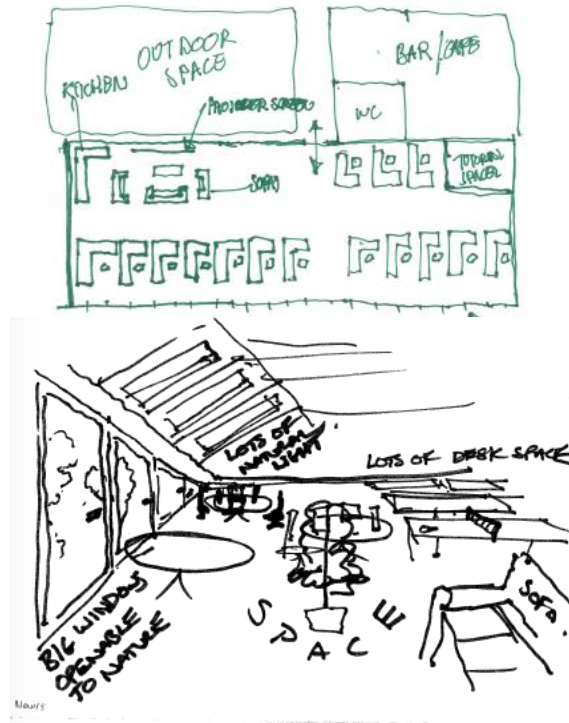


Figure 9 - 21 More Drawings illustrate the need for the design studio to be located with a close proximity of natural elements. Source: Author

9.4.3.3 Technology:

There are many aspects of the impact of technology on the students' experience within the design studio space, especially with the architectural and design education, that requires the up to date specific design software and equipment. One of the issues that the

students have agreed on is the limited number of desktops that were offered in the design studio, although, there are many other spaces at the university premises that students can use a desktop on. The fact that not all desktops are equipped with the softwares that are necessary for the work of the design studios. Moreover, the computers which are available and equipped, lacks the storage space needed. And with the availability of just limited number of desktops that can be used, students have trafficked around these limited pieces, making it stressful to find allocated time to use the device. Notably, although, nowadays, most of the students have their own laptops, the softwares are very expensive and not available for the students, and with the students' licence, it is still out of reach for most of them.

The other issue with the technology is the availability of some of the equipment that the students' needs for their tasks and activities needed for their design projects. These equipment includes printing, scanning and copying machines, model making equipment and photography equipment. The students, who do not have this equipment within the boundaries of their design studios, necessitated the presents of such or to be located within a close proximity. They argued that it is time-consuming to go and outsource these facilities, and it is more efficient to have these within the design studio space.

There are other forms of technology that some students mentioned, whether in the conversations or within their drawings for the design studio, as well as some speakers for airing music within the space, and iPads or tablets to perform research.

Power outlets are very popular within the design studio, as well as it helps the students continue working on their laptops for as long as the design studio is taking place. It also helps them to inhabit the space charging and recharging their other gadgets as a part of their experience within the design studio.

Students chose where to sit according to the availability of power outlets, preferring the sockets that do not block the way or where the cords are running for long. They even gave up their favourite spots in the space for where the power outlets are available. Some of the students initially chose a place to be their working space and they changed it later in order to be next to a power outlet. Most of the students in their drawings have emphasised the need of power outlets in the space (Figure 9-22).

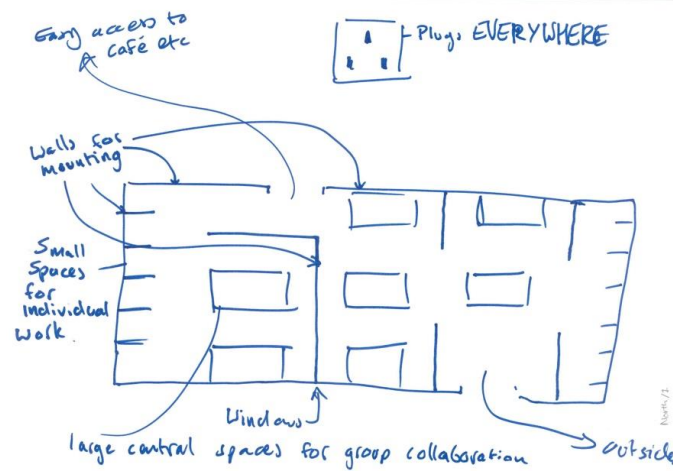


Figure 9 - 22 The emphasis of having power access in the design studio in the drawing of a Northumbria University student. Source: Author

The need for power outlets highlights the need for the technology and gadgets in the space, where laptops are distinctly an essential tool in the process of design. It is evident that other gadgets are as important and complement the design process. The use of phones, not just a way of communication, but a way for interacting with the outside world, and a multi gadget to listen to their favourite songs, and to set the perfect ambiance for themselves in the design studio, where they enter their own ‘personal bubble’ by the used of the headphone pieces.

9.4.3.4 Seating Arrangements:

The seating arrangements in the actual visited design studio were constant across the case studies. The seating arrangement found is cluster groups of almost six students facing each other. Although it is known from the literature of the organisation typology, this seating arrangement increase the team work and, and focus on the results. The seating arrangement also found in compete culture (Figures 9-23, 9-24, 9-25 and 9-26) refer to Chapter 3.



Figure 9 - 23 The workspace seating arrangement for fifth year at Northumbria University. Source: Author

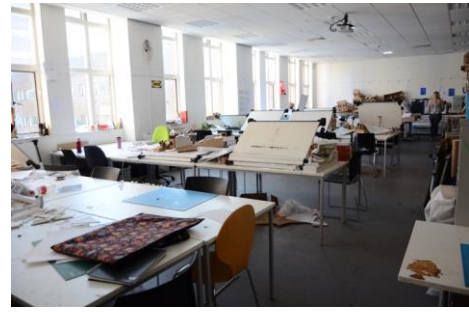


Figure 9 - 24 The workspace seating arrangement for first year at Newcastle University. Source: Author



Figure 9 - 25 The workspace seating arrangement for first year at Northumbria University. Source: Author



Figure 9 - 26 The workspace seating arrangement for the fifth year at Newcastle University. Source: Author

These seating arrangements have not changed between the first year design studio and the fifth year design studio in the universities visited. The number of students per cluster have has not changed also (6–8).

Analysing the drawings of the students, different seating arrangements have been found from the students, like the workstation, cubicles and the informal organic arrangement (Figure 9-27). Although, many that were present shared similarities with their current design studio seating arrangement, except with the number of students per studio, the total majority of the students reduced the numbers of desks to the space to the average of 15-20. As an indication that numbers of the students are higher that the studio space can holds, and in their opinion, the ratio could work at 20 students per studio space.

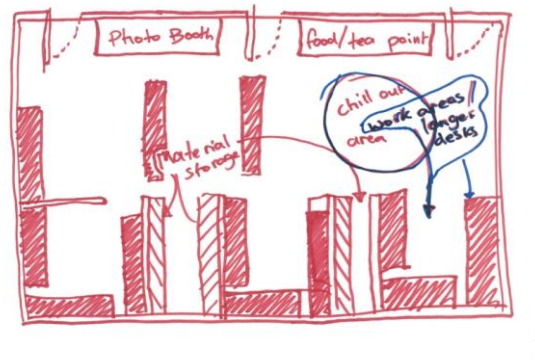


Figure 9 - 27 The seating arrangement of work stations.
Source: Author

9.4.3.5 Teaching Stations:

There has been reference to the idea of having a teaching station within the design studio. This has been found existed as a term in the recently built school of architecture at the Greenwich University, a moveable TV station for presenting. (Figure 9-29)

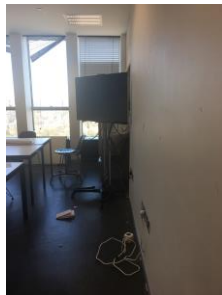


Figure 9 - 29 A teacher station in MAAD design studio. Source: Author



Figure 9 - 28 TV station as teacher station at Greenwich University.
Source: Author

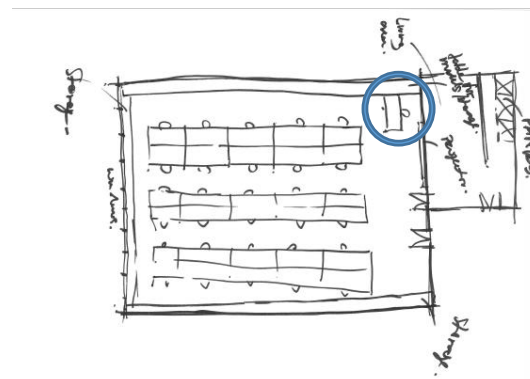


Figure 9 - 30 Teaching station. Source: Author

But in the context of the cases, in one particular case, an MArch student drawn a teaching station, replicating the classroom situation where the station is located at a corner of the design studio, which over view the whole design studio. Most of the time, the students stayed unsupervised in the design studio, and when the tutorials are taking place, the students has a free moving and touring the space, yet, the existing of such a concept in the design studio might indicates more supervisory approach from the tutors of the design studio (Figure 9-30).

9.4.3.6 Furniture:

Throughout the cases, the furniture found within the studio spaces were the practical tables and chairs, an arm chair, or sofas. The students showed the need for diversity in the furniture pieces within the design studio, and some specified the qualities that they would like to have in these pieces.

The tables have been specific and serve a person or two, instead of the joined tables that can hold 6 people at one time. Some tables actually resembled workstations that resemble offices. The extra space per person is what the students are trying to communicate through their drawings. Furthermore, on the level of group and team work, students have shown the need to what they called collaborative table, presentation table, or group table, which as seen before (in point 9.4.3.1), indicates the need for a table that can hold the students to perform joint tasks, yet, they can still have their private individual desks to return to at any point.

When seats and chairs were mentioned within the discourse of the case studies, the word ‘comfort’ usually have been associated with them, where the specification of chairs found in the case studies are the plastic unpadded or upholstered stationary chairs, the word comfort suggest chairs that are designed for long hours use, mobile, and either upholstered or have some extra padding for comfort.

There are other pieces of furniture that were recurrent, and meant to be in the design studio for recreational purposes, such as ‘ping pong’ table, which appeared in two of the students’ drawings (Figure 9-31).



Figure 9 - 31 The presence of the ping-pong tables in the students' drawings. Source: Author

9.5 The Design Studio Curriculum and Emotions

The Student Designer Engagement Map exercise asked the users of the design studio to state the project phase in chronological manner, then within the same representation, to either illustrate their emotions during each phase, their touch points and pain points and where this phase took place physically (Refer to the Methods – Student Designer Engagement Map). The Student Designer Engagement Map has revealed a lot of emotions concerning how the design studio curriculum has been effecting the students mental wellbeing.

9.5.1 The Project Phases

Design education and Architectural design education are revolving around the student-tutor relationship. In the design studio, the students are taught three pillars of the design education, 1. A new language, 2. New skills, and 3. Architectural thinking (Ledewitz, 1985). As a reminder of what was explored earlier in chapter two, the design studio curriculum is iterative, with ‘no single correct answer’ (Crowther, 2013).

The learning design studio (LDS) as proposed by (Mor & Mogilevsky, 2013), this model where ‘the main activity of a course is the students’ continued work on design challenges in a defined domain of practice. Students typically work in groups. They identify an educational challenge, research it and devise innovative means of addressing it. The course instructor guides the students through the process, and classroom sessions are mostly dedicated to group work and public review of design artefacts’ (p. 2). This

design life cycle captures the main ideas behind the learning design studio, and keep them in seven characteristic phases, Imagine, investigate, inspire, ideate, prototype, evaluate and reflect. The iterative nature of this process makes the result of this inquiry abundant (Figure 9-32).

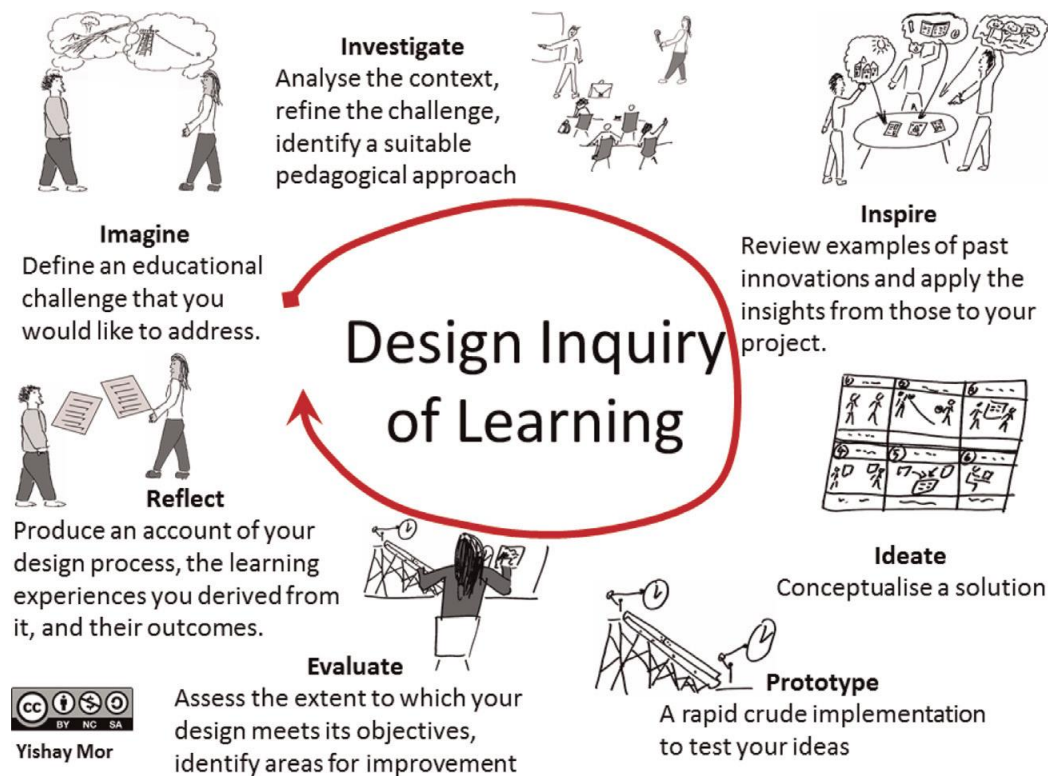


Figure 9 - 32 The Design Inquiry of Learning Life cycle, as seen in Mor & Mogilevsky. Source: (Mor & Mogilevsky, 2013)

Although one of the major aspects in the design studio is the relationship between the students and tutors, most of the time, the students carry on their learning in the design studio with the absence of the design tutor, as there are set timings where the group or one-one tutorials are scheduled.

In design project, Gross and Do (Gross and Do, 1997) describe the studio pedagogy as:

‘Traditionally the practice of architectural design is learned through a project-based ‘studio’ approach. In studio, designers express and explore ideas, generate and evaluate alternatives, and ultimately make decisions and take action. They make external representations (drawings and three-dimensional

models) and reason with these representations to inquire, analyse, and test hypotheses about the designs they represent. Through the linked acts of drawing, looking, and inferring, designers propose alternatives, and interpret and explore their consequences. In their sketches architects find visual analogies, recall relevant examples, and discover new shapes and geometric configurations. They use the representations to test their designs against a-priori performance criteria. And in the highly social environment of the design studio students learn to communicate, to critique, and to respond to criticism, and to collaborate' (p. 1)

The project phases as derived from the Student Designer Engagement Maps that been done in all the case studies have generated almost the same chronological stages in the life of the design project, which is what revolves around the design studio curriculum. The design project has multiple dimensions, some dimensions are done within a group and the others are done individually by the students.

The master students in the University of Sheffield segmented the design project in details to:

- | | |
|--|--------------------------|
| 1. Studio Brief | 8. Drawings and Sketches |
| 2. Field Trip | 9. Detailed Drawings |
| 3. Research (Background) | 10. Presentation |
| 4. Site Analysis (Mapping) | 11. Submission |
| 5. Positioning (Individual Brief) | 12. Reviews |
| 6. Literature Review/Case studies/
Precedence | 13. Portfolio |
| 7. Initial Concept | |

This classification, although follow the chronological sequence of the design studio project, it lacks the tutorials and the contact with the tutors' aspects.

In another classification, by the fifth year students in Newcastle University listed:

- | | |
|--------------------------------------|---------------------------|
| 1. Brief | 7. Weekly Tutorials |
| 2. Research Phase | 8. Detail Designs |
| 3. Analysis Research/First Instincts | 9. Presentation |
| 4. Concept | 10. Final Crit |
| 5. Group Work | 11. Collation / Reworking |
| 6. Interim | 12. Portfolio |

The Student Designer Engagement Map filled by Northumbria first year students is different to the others, the focus of the project phases was more towards modelling and model making, this might be as a result of different year group where the design project, the teaching approaches are more oriented on the production on models,

- | | |
|--|-----------------------------------|
| 1. Get a given brief | 6. Development of models |
| 2. Generation of ideas | 7. Final plans/sections/technical |
| 3. Research precedence | 8. Make final model |
| 4. Research reinforces original ideas | 9. Organise all the finish work |
| 5. Development of drawings and
concept models | 10. Present and pin-up |

To reflect on the stages phases derived from the Student Designer Engagement Map, and the design studio curriculum from the theories, this table (Table 3) has been created in reference to Mor and Mogilevsky (2014). The students who filled the Student Designer Engagement Map have agreed and came up with the common titles and stages of the phases of the projects and according to their understanding of the design studio curriculum,

	IMAGINE	INVESTIGATE	INSPIRE	IDEATE	PROTOTYPE	EVALUATE	REFLECT
NEWCASTLE	First Insights Concept	Research Phase Analysis		Tutorials	Detail Design	Interim Final Crit Portfolio	Correction/ Reworking
NORTHUMBRIA	Generation of Ideas	Research studies/ Research Reinforce Original Ideas	Precedents	Initial Concept Models/ Development of Drawings and Concept Models	Develop Models/ Final Sections/ Plan/ Technical Drawings	Present and Pinup	‘Develop’
PLYMOUTH			Precedents	Tutorials/ Talking to Tutors		Final Review	
SHEFFIELD	Initial Concept	Research/ Literature Review		Drawings/ Strategies	Detailed Drawings	Presentation/ Submission	Positioning/ Individual Brief

Table 3: The analysis of the Student Designer Engagement Map in all the case studies in regards to the stages of design and the Design Studio life cycle created by (Mor & Mogilevsky, 2014). Source: Author

Some of the phases of the design project, and the studio curriculum have been associated with negative emotions by the students. In the next points, there is an exploration of why these phases are negatively seen by the students, and the interpretation of the spatial impacts on perceiving these unpleasant emotions.

9.5.1.1. The Crit/Reviews:

There is an interesting aspect, which is the presence of the term crit, in one of the design study cases, and in some of the conversations in the others. Crit is a type of assessment that is associated with the architectural education and a part of the design studio curriculum, as the name implies, the crit is a formal critique event, negative, and short for criticizing, there have been other names for this event such as ‘jury’ which again suggests an unconstructive event, and review, which is the widely used term nowadays. Rosie Parnell and Rachel Sara have pointed in their book *The Crit*:

‘The crit remains unchallenged as the central method of reviewing and discussing architectural design work. This means that many of the values that it perpetuates are uncritically accepted. It may be argued that many of the less attractive qualities that the outside world finds in architects are first developed in the crit. It is generally a place of confrontation rather than conversation, of power rather than negotiation, of showing-off rather than modesty. And so is it surprising that the attributes of not-listening, of imposition and of arrogance are so often pinned to the figure of the architect?’ (Parnell et al., 2007, p.vii)

Although, schools have replaced the use of crits and juries with reviews, as the terms are having a ‘common perception’ of being negative and lead to stress (Krupinska, 2014). Jadwiga Krupinska stated that, ‘It was hard to avoid thinking that the word critique (a ‘crit’ in the jargon of architecture and design school) and the associated, often threatening word jury, could exacerbate the stress levels of students’ (Krupinska, 2014, p. 166).

There is a meaning when students still refer to the event where they can present and discuss their work with others and have the chance to get a feedback from fresh eyes on their projects with the term crit, instead of the term used as reviews after the reform on the design studio culture in USA and UK and some European countries (Krupinska, 2014). It may be fair to note that students who used this term are fifth year students, which not necessarily done the undergraduate at the same University or the United Kingdom, and it might be as a common term to be used amongst themselves, yet, the

common expectation from the tutor to change the mind-set of the students in regards the negative perception of the reviews. It is still valid that the reviews are not pleasant experience and it is stressful way of feedback from the students' perspective. Yet, each other non-design disciplines have this sort of stressful experience, such as exams in many theoretical disciplines. Spatially, some students argue that they lack the space to pin up their work, thus they are confined by space. When looking at the how the reviews are taking place spatially (Figure 9-33), the position of where the student is standing put the pressure on, the first line of the people are the members who are initially targeted by the presentation, and they will be the one to judge, comment and review the work presented. The second line is the student's colleagues and friends, for support, and they can learn from their colleagues' experience. And the third line of this spatial configuration, are the passers by, who visit the reviews, they might be other students from different studios, or they are there out of curiosity or interest. The presence of passers by can cause distraction and noise, which can hinder the process of the review.

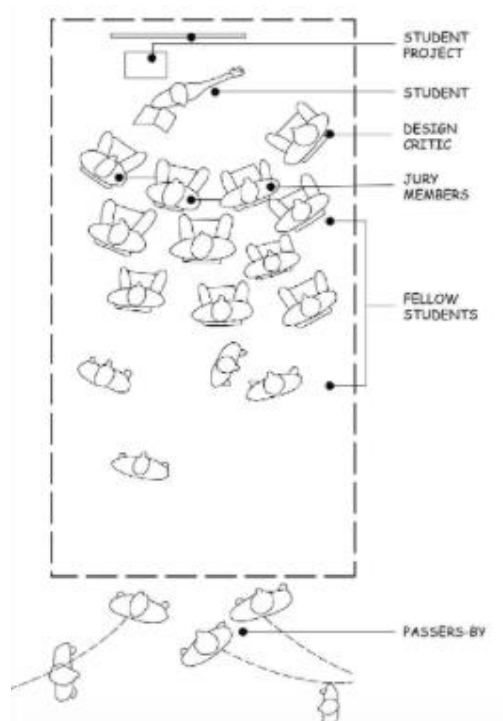


Figure 9 - 33 The spatial configuration of the review process. Source: (Parnell et al., 2007)

In the review process, being a performative action, each decision of the key persons in the review could affect the overall experience, whether the presentation of the student was interrupted by the reviewers, the focus on one aspect of the presentation, attacking the student or being very hostile and defendant by the reviewer. Who speaks first and how equally the time allocated for each reviewer. These are all ques in the review that contributes to the experience of the review process.

9.5.1.2. Site Visit:

Although this phase of the project does not take place at the design studio initially, this is seen as an important phase in the design studio curriculum. Site is where the students first get to be in touch with project, it ignites their imagination and give them the first insight of how the project is going to be developed further.

The site visit serves two purposes at the design studio curriculum. The first is to see and feel everything that is on the actual location of where the project is going to happen, i.e. the location, proximities, weather conditions, people surrounding the space and the actual context in which the project is set.

Yet, there are other type of site visits, or in this case field trips, where the students visit a place, city or another country to see a site, or some sort of precedents or an example for similar projects done.

The phase of the site visit normally takes place after briefing, and before the initial concept and drawings. The students have some mixed feelings when it comes to the site visit, ambiguity, anxiety, stress and some other feelings that is developed in a later stage but still concerned with the site visit.

The ambiguity and the uncertainty might be because of that the site visit is in a very early stage if the project, and it is following the project brief, which does not give the students the time to fully research the project and to look at what to focus on the site visit. Where the anxiety then took over, as the students do not know exactly what to look for at the site visit, feeling stressed to not overlook anything, especially when the site is not within the same country or the same city.

Referring to the MAAD design studio at the University of Sheffield, there are some other feelings that were experienced by the students when the site visit was over. The tasks that were assigned to groups to analyse the site. And the tutor asked the students to collaborate to share the data gathered from the site visit. Some students did not comply to share, and there have been a competitive atmosphere at the design studio that contradict the fact that this phase of the research and task is not an individual task and it is in fact collaborative.

9.5.1.3. Tutorials:

Tutors guidance and involvement at the learning design process is crucial to the design studio project. Yet, students have been feeling about tutorials as a tool differently with the progression of time and the stages of the design project.

From the analysis of the Student Designer Engagement Maps, the tutorials were mentioned twice in each Student Designer Engagement Map; one time before the interim reviews and the second time after, although tutorials take time every week in the design studio curriculum. At the beginning of the project, students feel in need for the guidance and the help of the design tutor. The feelings of the students in this stage is all about working and showing the tutor the most they can, and then to worry about the tutors' feedback, they also feel that their feeling is riding a rollercoaster and the ups and downs are depending whether the tutor liked their progress or not. Although this is not the purpose of the tutor, and the fact that the students are later on marked by a committee and other design members, should ease their feeling of that they have to please the design tutor.

The second phase of the tutorials are more towards verification and consolidation, students feel the urge of finishing their presentations and other technical drawings, rather than focusing on improving and developing the design ideas and concept. This results in some confrontations between the students and the tutors, some students think that they want to stick to their ideas and not to take the tutors inputs forward in their design project.

9.6 Introduction to the Proposed Framework

In this section, the aim is centred on understanding how space is perceived and how users can experience space in different ways, examining the main theories and ideas surrounding perceiving space and place, from architectural theorists through to psychological philosophers, and accordingly building a theoretical framework around the subject matter.

Further in this section, more thought and debate is centred on the ways in which emotions provide a valid extension to how space can be perceived, through experiencing a design studio through emotions. This section provided a holistic idea into how emotions add an extra in-depth layer to understanding how users of design studio spaces experience it, in addition to the conventional concept of how a space is perceived.

The third part of this section, the researcher is trying to investigate the weight that the independent bodies and institutions that they look in the students' experiences and the universities competence in regards of providing spaces that are adequate to the learning level wanted. And then as an example to compare the findings of this study that relates to the physical status of the design studios that were investigated with the outcomes in the reports of Royal Institution of British Architect (RIBA), which validate the courses of these universities in an interval times.

9.6.1 Assessing a Design Studio through the Eyes of its Users

There are several ways that designers and architects can investigate buildings. And making sure whether their designs when built are functioning the way they thought they would. One way is by using the users. Users are vital for any building, with designers acknowledging this fact. Importantly, users are used as a tool to evaluate buildings and assess the success of the designer or architect of such a building. Post Occupancy Evaluation (POE) is one type of evaluation for building performance. In this vein, Wener, McCunn & Senick define Post-Occupancy Evaluation as:

'A systematic assessment of one or more (and usually recently) designed, occupied spaces. Professionals make use of established quantitative and qualitative social science research methods to describe the nature of a site and the quality of its operation and function for various user groups' (Gifford, 2016: 251).

Studies have applied POE in an effort to assess designs in Higher Education Buildings, and particularly in schools of architecture (Nasar et al., 2007). Some other studies have applied qualitative methods in an effort to assess Higher Education facilities (Tookaloo & Smith, 2015).

This approach, though working with clients, is centred on verifying whether the design of the building is working properly and ticks the boxes of the initial design; however, it is not a case of understanding how the client experiences the space.

'A POE uses data about what worked and what did not, and how people function in, respond to, the space and its various features and technologies' (Gifford, 2016: 250).

There are some architectural based criteria and theoretical criteria for analysing buildings that are widely used by designers and architects. These criteria works perfectly with historic buildings and precedence investigations. These criteria are known by components that are normally investigated in the building in question through a single perspective on the researcher himself. The orientation of the building, entrance, structure, circulation and materials are all components of architectural and interior components, whilst line, planes, shape and form, mass and volume, scale and proportion, balance, and light are the components of criteria pertaining to theoretical precedence (Ching, 2007; Nussbaumer, 2009; Clark and Pause, 2012). In this research, the researcher tried to mix the components of these criteria to evaluate space through time collaboratively with the users of the space. Mainly, looking to evaluate the space through the eyes of the users. And to serve other purpose of generating common knowledge around preferences of users. Thus, knowing what would make the design studio space provide the best experience for its users spatially.

9.6.2 Design Studio: Perceiving the Environment

There is no doubt that the built environment, in general, alongside the interior environment has an impact on the ways in which users perceive them and are influenced. Research in this domain—notably that carried out by psychologists and designers—have targeted interpretation of spatial features that influence people, and the how and why of such.

There are many theorists that have investigated the idea of perceiving the built environment on the human behaviour. There is a well-known phenomenological approach into how to understand the city and the production of city spaces by the French philosopher and sociologist Lefebvre. On the same level of the city and urban context, Lynch in his book, tried to show how interactions between people and the environment results in understanding the Image of the space (Lynch, 1960). The focus in this research is on the practicality of perceiving spaces and places, looking at it from a narrower lens as to the one Lefebvre & Lynch, such as when examining a room, one can describe it through looking at its colours, layout or overall ambiance. Generally, there are three important approaches to perceiving a room in Interior Design, as Brooker & Weinthal state in their book *The Handbook of Interior Architecture and Design* (2013). The ideas are Probabilistic Functionalism by Brunswik (1943, 1955) and the ‘Lens Model’, with affordances proposed by Gibson and Collative Properties by Berlyne. Illustrating these ideas helps to set the scene on the ways people perceive space.

The first idea by Brunswik, creating the ‘lens model’, state that people who experience the space take ‘distal cues’ from the space and then perceive these distal cues with ‘proximal cues’, and then accordingly evaluate the space:

‘As far as the environment is concerned, one will have to start from the so-called ‘distal’ stimulus—or effect-variables as reference points and study their relationships to the proximal (or boundary-) variables. On the perception side, an example of a distal variable is the distance of objects’ (Brunswik, 1943:256).

For example, when someone enters a hotel room and looks at the colour of the room (distal cue) and it is light (proximal cue) causes him to think that the room might be too bright to sleep in (judgement). This is very subjective, however, and depends on the person and their own way of perceiving and evaluating space. It could be—and is mostly the case—that there are more than one proximal cue and more than one distal factor for perceiving one space; however, there is then the ‘weighting’ of these different cues in order for a judgement to be formulated, which is why this is then referred to as ‘probabilistic functionalism’. Importantly, what works for one individual might not work for another, or even for the same person experiencing the space over a certain timeframe, which could lead to new evaluation ‘achievement’ (Brooker & Weinthal, 2013) (Figure 9-34).

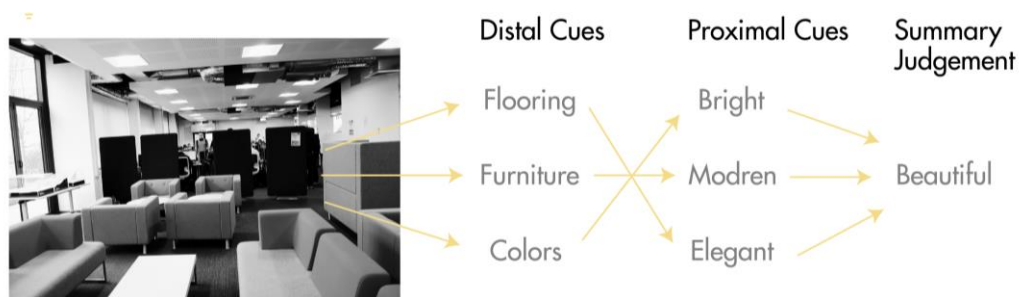
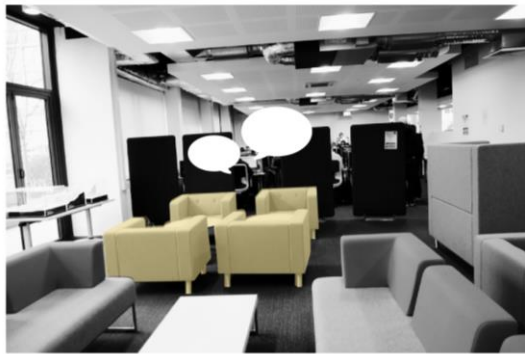


Figure 9 - 34 Lens Model. Adopted from (Brooker & Weinthal, 2013)

Affordance is a term developed by Gibson in 1976: ‘Affordances are the qualities of an object or environment that allow or afford an individual to perform an action or series of actions’ (Giesecking *et al.*, 2014:42). This involves deconstructing the environment or the interiors, recognising ‘substances’, such as materials that are in use in the space, and ‘surfaces’ that make space, with both substance and surface ‘arrangements’ in Gibson’s Affordances Theory coming together to create a ‘layout’ (Brooker & Weinthal, 2013). Affordances, in a nutshell, may refer to the immediate perception of what a surface is made from, i.e. certain substances, which can be seen to feature in the point of view of the person (Figure 9-35).



Conversations



Post - it notes

Figure 9 - 35 Affordances. Source: Author

In the recent interpretation of Affordances as a theory, there have been associations with what space can afford to do in terms of social behaviour. This is known as ‘Social Affordances’.

Collative Properties is an approach devised by Daniel Berlyne. The approach is based on comparing attributes of the setting, which then allow the person to express interest in the setting itself. The collative properties could be used to perceive a state of the interior space or otherwise to detect the unexpected features in the space, or to sense whether something is out of place. Novelty, complexity and surprise are some examples of collative properties (Brooker & Weinthal, 2013:285) (Figure 9-36).



Modern . Simple

Figure 9 - 36 Collative Properties. Source: Author

Whilst such ideas are well-established in the environment perception, they are focusing on generating individual perceptions, while some spaces are used by groups of mutual or non-mutual goals and aims. In educational spaces such as the design studio, it is a space that is set to be used by students and not individuals.

Spaces need users within them to be experienced, although users experience spaces differently, with experiences differing from one user to another. Although these are ways and ideas centred on perceiving the environment, a suggestion of perceiving the environment through how the space influences its user is one way of looking at the space. Through communicating the emotions influenced by a certain space, the built environment of the space is described. The accumulation of these emotions can produce a description as to how the space looks and feels. Other terms assigned to how spaces can be described, other than 'beautiful' and 'ugly', for example, could relate to emotions, such as 'isolative', 'inclusive' and 'productive', all of which may be an extension to these ideas introduced in the first place. Emotions felt within a space can be weighted against spatial features, such as those detailed in Brunswick's approach, where the dominant or favourite result can be associated with the space according to time.

With the range of emotions that have been seen to take place at the design studio, as students elucidate, feelings can best describe their experiences, feelings towards the space itself, feelings towards the success of activities and its position in the space, and the way in which the space actually influences people into feeling.

9.6.3 Experiencing the Design Studio

Everyone in the design studio experiences the space differently according to their expectations from the space. Perceiving a space can be impacted according to what initially is wanted from it, amongst other factors that happen within the space. Where the space is intended to do working drawings, and it was not equipped with the right working spaces and the right lighting and furniture and the whole ambiance where drawing is intended, the space even if it was a state of the art, it is yet not good enough for the activity intended.

The studio space could be experienced differently as well because of the different backgrounds of its users, where people have experienced better spaces that have been previously experienced by them, it is a fact that this space is not going to be good enough, where others who have not had to experience as good space as the one they are experiencing will have a better one than the others. As a matter of comparison and relating.

The Student Designer Engagement Map succeeded in recording time, pain points and touchpoints, which are associated with space and emotion at the same time. Validation concerning students' insights can be established through observing and questioning this through the data collection phase. Sometimes, reassurance of the validity is achieved in terms of how the students emphasise specific emotions, and the notions detailed in their illustrations of the optimum design studio. Drawing what worked for them and what does not work and how this can be changed into something they think will work for them may make them feel better in the space. And even in this there have been the issue of what worked for one did not necessary worked for the others, yet there have been mutual agreement on some of the ideas that have been presented by the findings of the Student Designer Engagement Map.

Looking at the curriculum of the design studio (refer to Chapter 1 and Chapter 2 for more details), the design curriculum which is based on problem solving and exploring ideas and answers to architectural problems using visualisation and skills that were taught and introduced by the design studio tutors. The first stage in any design studio curriculum is the briefing phase, where the project is being introduced. This stage is the very beginning of students' interactions with the space itself, and is always associated with excitement, hope and high expectations. It is a new beginning, with students always pursuing a resolution and approach to excel in the project; being on the edge and corner of the room allows students to have a considerable view of the space as a whole, as well as to their colleagues and peers, which is why corners are popular throughout the brief stage.

There was mutual agreement within the narrative of the emotions experienced within the design studio curriculum stages, starting design brief stage where students experienced

many emotions such as uncertainty and excitement especially that this is the beginning. The uncertainty and doubt appears following the design brief stage. Students become positioned as needing to set their own brief within the bigger brief. In this particular phase of the project, students tend to identify their own personal space in relation to other new students and the design studio, whilst also marking their social territory by grouping with friends and familiar faces.

A field trip or a site visit is commonly seen to follow the briefing. Although this happens outside the design studio, uncertainty continues in regards what to look for, especially if the site is not in the same country or otherwise is within a short distance of the university. In this case, there is much anxiety to capture as much information as possible.

The research phase starts shortly after. The task of researching often comprises group work, with groups formed by the tutor. Whatever has been established in terms of territorial and personal boundaries now changes and is revisited. New territories are formed with a mutual aim set by the tutor. This change informs more spatial changes. A space is considered adequate enough to hold group members, to facilitate access to power so as to charge laptops, and availability of desktop computers. Furthermore, on many occasions, the group may move together for visits to the library, leaving their claimed space but nonetheless continuing to mark their territory by leaving their possessions on tables and clearly identifying those areas being used by them.

The spatial setting is a learning process; the experience of the space changes with every phase of the design project, and what the users need from the space, to perform the tasks and activities that helps. Where the need of the space changes from the design brief, as it is more focused on presentation and discussion, towards the design ideas and conceptual drawings, as the research is needed the students change their location towards the library, or desk research using laptops and desktops, and thus the power outlet starts to be very popular, and the queues on the desktops available in the space. The need for the tutors change over the course of the project phase, where in the beginning the strive to discuss ideas and to seek approvals, the phases towards final reviews, they seek consolidation. This again reflects on the spatial space and their ability to collaborate and

team work. The spaces tend to be altered to accommodate private tasks, and the attitude of the students towards each other tends to be more protective. This then impacts on the notion of privacy, the students strive for private confined spaces as it gets near review or interim, then there is a space where this gets exposed just after the interim, the need for privacy builds up later on.

As a way to record missing experiences of students and their aspiration towards a learning and working space such as the design studio, the quick drawings and sketching that they have been asked to illustrate their own 'ideal' design studio, this practice have led to many resolution of things that worked for them, and things they would like to keep. And other things and spatial features that they thought having them will be beneficial and will improve their working conditions in the design studio.

To emphasis on the idea that every student experience the space differently, the generated drawings and the findings were very different from each other, but there were fundamental aspects that were agreed on between the students in regards with the physical characteristics of the design studio, such as the site, the privacy, the centrality, the contextual needs of the space and so on that they were discussed in the findings at earlier in this chapter and have been gathered as propositional guidelines for designing and using a learning design studio in the next section.

9.7 Framework of Propositional Guidelines for the Design Studio

A framework has been designed in order to capture students' experiences within the design studio, where the tools and methods were designed to fully underpin the tangled relations between space and users. Furthermore, the framework has also generated some knowledge and information that can be taken into consideration when designing a space such as that of a design studio, or which can otherwise be used in order to understand of the complexity of the design studio.

As seen from the case studies in chapter 5,6,7, and 8, in the space, people feel and behave differently according to the way in which the space is designed, their background and who they are, and according to the curriculum that governs the space. They respond spatially to the learning approaches briefed by their tutors, and compellingly follow their

university policy in order to be in that space. The ideas that are introduced at this section is derived from the findings discussed earlier in this chapter, and they are from the researcher reflection on the findings.

Where these three variables contribute to the spatial experience of the design studio, the generalisation of outcomes is not possible where such variables are not uniformed for each case studied. Nonetheless, putting these ideas and applications in line with other contextual variations, such as students' demographic profiles, the building profile where the design studio is located would differ in terms of outcome and shape, thus creating a design studio that fits the need of the users instead of a replica that works in one situation but cannot fit another. Importantly, therefore, a space should be designed with such a weight in its context—as a shelter, as a home and as a space for production, creation and collaboration.

9.7.1 A Flexible Space

The design of such a space has to be flexible in its nature so as to allow for the potential and possibilities, and also room for alteration for the users of the space, thereby facilitating them to adapt and claim the space as their own, inhabiting it over the duration of their study.

The space can be adaptable so as to align the multiple stages of design. Moreover, it can be formatted to be open to lectures and can then be turned into a drawing station at the same time, with the ability to adapt to students' preferences from privacy and social perspectives which was discussed under Privacy in Chapter 9.

The more the studio can be altered to meet the preference of the majority of the students, the more the students can interact with the space. As seen in many of the students' drawings in regard with how the space could be designed, and their conversations and aspiration of having their own space, in order to change and flexibly turn it to adapt their needs and the need of the stage of design that they are within. The University of Sheffield case study provide a reference within the data that have been collected that could be referred to in Chapter 8.

9.7.2 Central and Radial

Most of the collaboration and group work takes a place at the centre of the design studio, where students feel at the peak of their sociality and are therefore more likely to engage in social, collaborative tasks. This has always been represented in the form of a central meeting table in the middle of the space.

Where the centre is intended for social activities and tasks, the corners and edges of the design studio are intended for more private, solo tasks. Radiating from the centre, the further from the centre, the space shuts students from one another to a certain level. Other activities that are away from the centre might involve a degree of sociality, but are intended more towards less intense tasks, such as relaxing, meditating, eating and researching.

This has been discussed within Chapter 9 under themes concerning spatial organisation and furniture, Layout. Through the interpretation of some of the students' drawings and spatially analysing them according to elements and principal of design. The next point was stemmed from the same interpretations.

9.7.3 Focal Point

Having a focal point in the design studio or on its surrounding, especially when it's a natural element, or open to one. The ability to direct the vision from the tasks and activities towards a stress relieving area, or a relaxing scene. The arrangement of seating to face a natural scene, an inspirational, or towards an important feature in the space.

9.7.4 A Window to the Outside

Windows attract students—and especially when they have a view to the outside. When students draw their own perception of a design studio, a few thought a studio should be part of a bigger building, whereas many considered the need for the studio to be a standalone structure, surrounded by natural elements.

Windows can come with a good view, but this always brings in the sunlight as well. Blinds might provide a solution, but certainly this would require maintenance over time (and can be easily obstructed as a result of materials and models that students leave on the ledges of windows). A proper solution for utilising windows would be needed, such as through the technology of tenting the windows to control incoming light and when projecting upon the walls might be considered.

An openable window can provide a means of ventilating the space and allowing in fresh air if accessing outside is not possible due to the location of the design studio; in other words, if the studio is not on the ground floor of a building. The important word in this context is controllable. For HVAC, a mixture of natural and mechanical systems is required to all the users of the space pick their preference and alter the space to their comfort. This was clearly evident in the case study of Plymouth University in Chapter 7. Their new building depended on the artificial ventilation and the windows of the building cannot be open.

9.7.5 Walls—and Lots of Walls

Plain walls are useful and complement many activities within the design studio. Projecting, reviews and brainstorming are tasks that require plain walls. Pinning up on the walls initiates conversations around work and leads to collaboration. Although walls might not be solid, muted or as plain as considered necessary, they can nonetheless act as huge boards that students can use to write on and brainstorm, and that can be erased and used over and over again. Walls could therefore be a translucent surface or might have flexible, moveable partitions. Many of the students' drawings indicated the needs for walls, for the use of pinning up and mounting their progress of the projects.

9.7.6 Storage to Store the Clutter

Storage spaces and units are popular amongst students. Having these units eases the movements of students in terms of materials and models. Having some special storage units that are large and wide enough to hold models would be useful.

Another type of storage system could be for the purpose of the storing previous years' models, which are usually seen in the design studio but which nobody wants to move or touch. These take up space that current students could have utilised. A recycling space could also be introduced to recycle the leftover materials and models. The availability of tidy and clean spaces could also influence students' overall willingness to work in the space. Through all the cases, the reference to storage was clear. The need for extra, big, and accessible storage came up in most of the focus groups. This was observed also by the researcher in most of the cases (except the case of Plymouth in Chapter 7, as the students owned the space and had it locked and secured, the storage space did not come up in the conversation, although the observation was that models from previous years were all over the space and that caused problems with controlling windows blinds).

9.7.7 A Studio Per Number of Students

Many studios are used by number of students that is more than the capacity of the design studio. Alternating days of the week to accommodate teaching and students within the space. Or use the hot-desking style, assigning multiple students to one desk to use it between them, and letting them arrange timings of using the space. Providing each student with a desk can increase ownership and belonging in the space. Yet, number of students that range between 15 and 25 is claimed to work best as a community in one space according to students. Best number of students to a studio has been calculated through students' illustration, and their feeling of space being crowded and disruption preventing them to concentrate.

9.7.9 Furniture

Furniture of Design Studio has to have certain qualities that can accommodate the diverse activities that takes a place inside the design studio space. Being flexible, portable and moveable are some of the qualities that help to cater to the students and the users of the design studio needs. Light, yet durable and could resist prolong use helps to sustain the furniture in the terms of the heavy use by the students in the design studio.

Other than being able to move and use the furniture, comfort is a needed to help the students who use the space for long hours. The material of the furniture, the dimensions and the ergonomic are some of the considerations when selecting a furniture piece for the design studio.

The variety of furniture pieces, and the ability to use for more than one purpose can help accommodates the different activities and tasks in the design studio, the furniture piece should be easily maintained and cleaned so the students will not refrain from using them, and will then easily encouraged to clean them afterwards. This could be seen in the discussion over furniture in Chapter 9.

9.7.10 Clear Circulation Routes

A clear grid of circulation paths, between a clear major circulation and minor branches. The studio designed with the circulation routes in mind, and the pathway frequency that students heavily used. The circulation can be created by experiencing changing the furniture and items in the design studio, especially when these furniture pieces are moveable and flexible to be changed and reorganised.

On another level, the circulation pathway that is needed from the design studio and the building entrances, and the other facilities supporting the design studio have to be clear and easily navigated by the students. Although students can easily find their way between places with experience and time, the models and artefacts created and used by the students, especially when no storage and space to keep them, they would have to carry it with them very frequently.

9.7.11 Surrounded by Points of Interest

The location of the design studio and its proximities are important factors to be mindful about when selecting a new site. The design studio is suggested to be accessible to its surroundings. Most of the findings have pointed that the design studio is open to a natural outdoor surroundings or to be built on an element of nature such as a river front, or open to woods. Where that is not possible, the suggestions were to have a gallery or a

common space that is open to the public. Privacy in the design studio is needed and valued, but the ability to be work ‘outside’ whenever possible, is also appreciated by the students.

Being surrounded by natural element was the very evident in the case study of Plymouth University in Chapter 7. The need to be interacting with the surrounding have been very clear in the drawings generated by the students.

9.7.12 Design Studio Zoning

The design studio, as a space, mainly consists of working spaces. There are different zones other than the main working space that would be useful to see within the boundaries of the design studio. These zones could help to serve different purposes, such as recreational, working, and supporting for learning. Most of the common needed zones were a pantry/ kitchen, relaxing zone and a brainstorming area, research zone with a small library that has some of the reference books.

Other zones to serve other functions could be beneficial and preferable by the students; these might be seen outside of the design studio, but their existence within the design studio save time, effort and help to provide the students with more chances of availability, instead of waiting for their turns in the main units provided by the university. These functional zones are but not limited to modelling station, printing, scanning and copying facilities, and photography booth.

9.8 Two Perspectives for One Experience

The findings of the four case studies have mostly captured the students’ perspectives and inputs to the learning design studios they are in, these experiences were also associated with emotions that the spatial aspects of the spaces that are impacting on them. There are many bodies and institution that test and examine the students’ satisfaction and experiences on the level of the Universities, such as the NSS, although this is on the level of the University as whole, there are specialised institution that looks to accredit courses and part of that accreditation is the students experience. Royal Institute of

British Architects (RIBA) have been visiting and validating the universities that provide architecture courses, which have been the case of the universities that have been used as case studies, within each report an attention has been put towards the students' experience of the physical design studios.

The outcome of the RIBA's reports with regards to the design studio spaces and the students' experiences will be presented and discussed through the research perspective. It should be noted that the validation was not done for the same years that this research has been conducted in.

Northumbria University:

Both of the visited studios has been validated by RIBA, the MArch, and the BA in Architecture. RIBA reported (RIBA, 2014) That after meeting with the students these conclusions were listed to why the students have chosen Northumbria:

- The quality of the studio space and the excellence of facilities in general.
- The collegiate studio culture; students are encouraged to inhabit the studio and work collaboratively' (p. 8).

The findings from this case study have concluded that the students although did not find that the quality of the studio spaces up to their expectations as they had to use often other spaces just like The Zone (It's also worth mentioning that the University of Northumbria is investing in new studios that are going to be open in 2019). The report also pointed that the students had inhabited and have access to the space 24/7 which is the case for the MArch but not the BA students, where they had only an access to The Zone after the working hours, they did also think that they have been engaged in collaboration activities and they were instructed to collaborate which they found very useful.

Newcastle University:

RIBA has brought to the attention of the Newcastle University that the current studios are not 'wholly fit for the purpose', and an action have to be taken in the short term. The

notion of ‘world-class civic university’ is contradicting with the fact that there are issues with lighting and heating, and there are concerns on health and safety, this and there is shortage of lockers spaces and under supervised workshops and ‘room of making’ (RIBA, 2017a), it is also noted that the new premises for architecture in the Claremont building will improve the overcrowding issue, yet it is still anticipated to be packed with students (RIBA, 2017a).

The findings of this study were in line with the findings of RIBA, the students were lacking of spaces and desks to work, and they were lacking of storage spaces for their personal and model related materials and things. It has been clearly visible in their Student Designer Engagement Map and their drawings, the observation showed although they have shelving units, they are already packed with models and papers. They also were striving for openings and views, although they were located in a building that looks over a quadrangle.

University of Plymouth:

The students of Plymouth had their own design studio and spaces reserved for them through the time of their study, they are clearly appreciative of this, although some of the students do want the space to be available 24/7. The students within the design studio in Plymouth are more open to socialise and not going in the closed bubble that the other universities students’ experienced, the ambience of the space is entertaining and they have special place for relaxing and eating within the space of the design studio. Yet, they have been unhappy regarding the mechanical ventilation systems and the inability to open windows. The location of the design studio in the 9th floor as well impacted on the fact that they felt isolated from the public and that was reflected upon in their drawings.

The RIBA findings were almost similar to the findings of this case study,

‘The students are very happy and supportive of the School, and highly value the availability of personal studio space. The studio is clearly one of the greatest selling points of the school and contributes to the lively and supportive student / staff community. However, there are a few minor irritations, which if resolved, may result in

increased student satisfaction. These include the poor climate control in the building and the availability and perceived expense of A4 and A3 printing' (RIBA, 2017b, p.7).

The University of Sheffield:

The RIBA has captured the most important issue the students have been complaining about which is the lack of spaces in the Arts Tower which is the home of the School of Architecture at the University of Sheffield. The complementary spaces are located outside, like the workshop which is one of the most vital space in the life of the students of the architecture.

'The board understands that the school has reached an optimum size for the space they have. The board therefore advises the school to continue to deliver their plans for expanding facilities, in particular the relocation of workshops into the building and additional floor space to accommodate any future increases in student numbers' (RIBA, 2018, p. 6).

The finding of this study also had been revolving around the lack of the spaces and the occupation of the designated area by other students to the ones who has lawfully the right to be in the space.

9.9 Conclusion

This chapter has allowed space for transforming the data into information that can be used to generate an answer to the research question. The first section of this chapter has discussed the way in which the data gathered were analysed by looking at the different methods used and then ways in which they can be analysed. Most importantly, attention has been directed towards looking at the visual methods and how they can be tackled through initial discourse analysis, and then more around design spatial organisation approach towards analysing the visual data.

The second section illustrates the themes that have been generated from the study, which revolve around social aspects, environment control aspects, and spatial organisation and furniture. In the fifth section, a narration of how the project phase of the design studio

influence the emotion of the users and impact on the physical change of the arrangements and furniture grouping within the space specially in two important phases which are the crit/reviews and the tutorials.

Reflecting on the literature on a subject such as that of architectural education learning spaces, there is a very limited number of studies and research exploring the design studio as a spatial space. The focus always was towards the classrooms and other supporting learning and teaching facilities and spaces. The sections 9.6 and 9.7 are considered as an application of this research. Summarising the applicable outcomes from the literature, findings and the analysis of this research and providing it within a design context as a consideration and recommendation for designers and architects who are engaged to design learning studio spaces, or learning spaces that can benefit from the design studio research, this research also targeted the management and use of the design studio. These propositional guidelines have been generated from looking at a few design studios. Spatially, there are many aspects to look for when designing a space, yet the fact that the users of similar space to the one being design highlighted these aspects give a clear indication of their importance in the whole user's experience of the space.

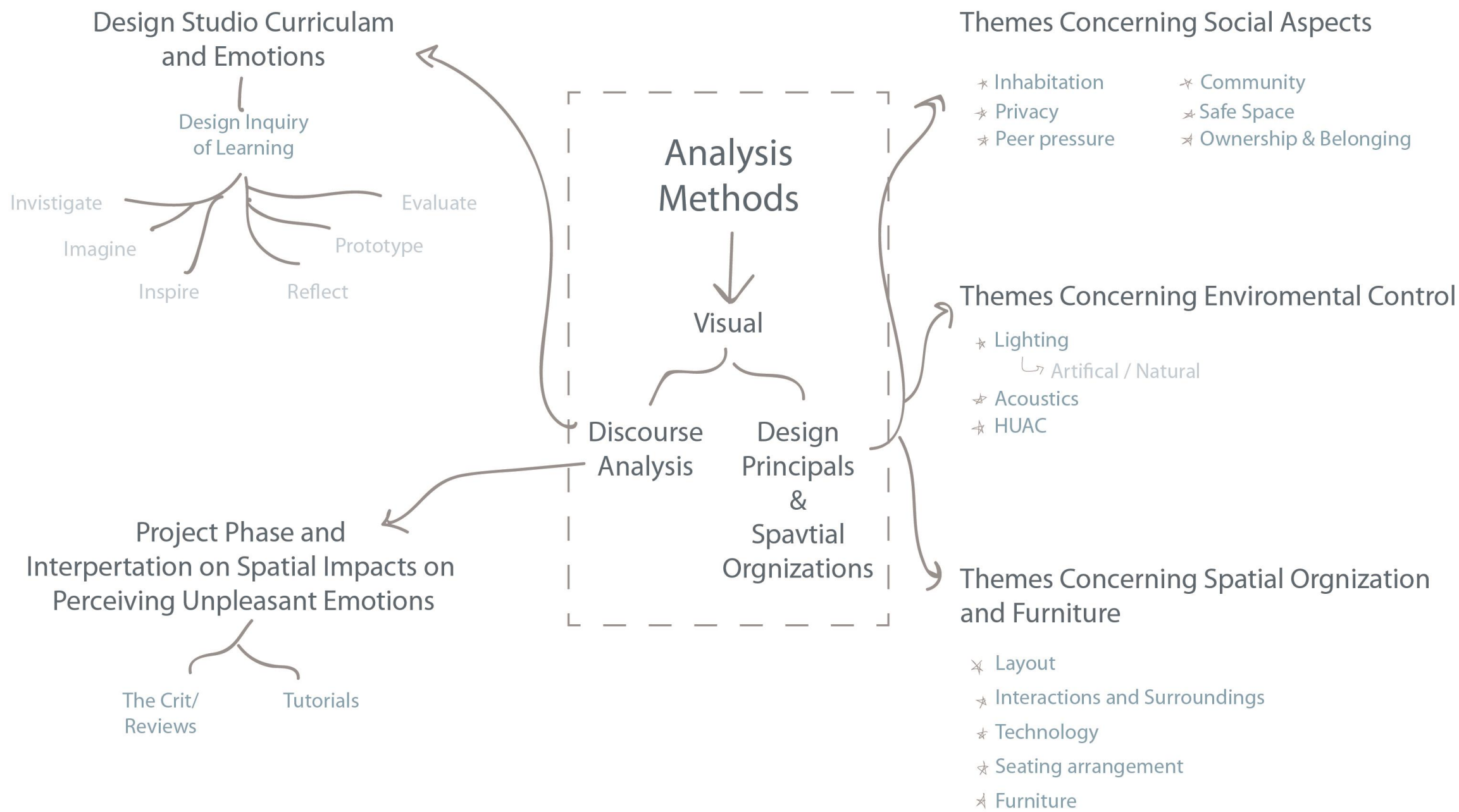
There are other aspects that can help setting policies that governs the space which could be learned from this research, such as regarding the access to the learning design studio, allocation of time for students, ownership of the space and the working desks, and also the out of hours' policy. And these have been discussed in the analysis at Chapter 9. Nonetheless, the focus, particularly in this chapter, is centred on spatial considerations.

Section 9.8 looks at the holistic approach of this study concerning the perceptions and experiences of the spatial space and position it within the other frameworks and theories that have been created for the same purpose, providing at the end a comparison of findings that have been generated by Royal Institution of British Architects.

This chapter has discussed the findings, the framework and provided and applicable use of this research. The next chapter is the last chapter. It concludes this research and summarise the findings and highlight the potentials that this research opens in the future.

Chapter 9

Analysis



'The details are details. They make the product. The connections, the connections, the connections. It will in the end be these details that give the product its life,'

Charles Eames

Ten

CHAPTER 10: CONCLUSIONS AND RECOMMENDATIONS

10.1 Overview

Responding to certain thoughts and observations that the researcher tried to comprehend regarding the design studio as a space and the relationship with its users. Being in that space, but for different purposes, as a student, as a tutor and a researcher, initiated the need to link all feelings and thoughts into one big holistic overview of the space and its user; hence, the completion of this thesis.

Putting these questions in mind helped to articulate the aims and objectives of this study. The research context boundaries were then set by the investigation of the literature around the Higher Education, Architectural Education, Design studio and the Environmental behaviour on one hand, and exploring ideas and theories around spatial perception on the other. The research question that sums this research is as follows:

‘How do the physical characteristics of the Design Studio influence certain behaviours of the studio user, relevant to collaborative learning?’

With the question on mind, and the context of the research has been established, the next chronological step was reviewing methodological approaches that best fit this research. Qualitative research as seen in the methodological chapter was in favour for its in-depth investigation regarding experiences and perceptions. The qualitative research approach generates in-depth and insightful results, which was needed for such an investigation. Where the main aims of this research were to investigate the influence of the design studio space on its students’ experience, how do the students value the design studio, and explore why such an interaction could be a derive certain favoured behaviours and skills that is most wanted in the design studio. It is believed that the latter help in building the architect and the designer personalities and values.

In the context of the qualitative approaches, the methods were selected and designed for best capturing the spatial experience of the design studio. These approaches were included under the title of case studies, where semi-structured interviews, observations, and focus group discussions have been carried on. In the focus group, the researcher

used the Student Designer Engagement Map to accentuate and derive the insights from the participants, alongside the drawings and drawings interpretation.

Looking at the thesis aims and objectives, the methodology initiated and the findings from these varied methods have led to identifying the thesis framework, establishing a clear vision of how students behave, act and interact with the studio space, and it explores features related to students' perceiving the architectural education through space. These have led to accomplishing the main aim of this research, which is to understand the relationship between the physical space of educational design studio and the behaviours of students engaged in collaborative learning. The findings of the research have shown aspects of the design studio as a physical space that influence the learning processes within the space, and thus, it lines with the second aim of this thesis, which is to explore designs, arrangement and appropriation of design studio that set the scene for the collaborative learning. The findings also went beyond collaboration, but mainly covered many emotions experienced in the design studio, which were influenced directly or indirectly by the design studio as a physical space, which lead to accomplish the third aim of this thesis.

The research outcomes are detailed as follows:

1. The research has explored and collected literature concerning the chronological presence of design studio within its context of higher education institutions, and has identified physical/spatial characteristics that make the design studio. It then critically managed the debate around the importance of the physical presence of the design studio.
2. The research also has associated the literature of the built environment and its effects on users' behaviour with their experiences in the space whenever possible. Looking at technical aspects of the design in the built environment such as the layout, the contextual needs, and all the way to the ideas around personal space and optimal distance.
3. By reviewing the current issues concerning the design studio, the available methods, a methodology has been put together to capture the users' experience and perception on the design studio as a physical space and as an incubator to

emotions. Which resulted by the creation of a framework used to record experiences and perceptions.

4. The framework has been proven its efficiency in recording experiences and perceptions from students and users of the design studios visited in the four case studies. The students have indicated many notions in the design studio that rationalizes their perceived value for such a space.
5. Based on the users' perceptions and experiences, the research has identified aspects and features of the physical design studio space that affected the learning and teaching processes that took place within the space. These have then put into the form of propositional guidelines.
6. The research has managed to narrate the relationship between learning activities, the policies of the context in which the design studio is located (University) and the physical space of the design studio.

10.2 Potential Contribution

The results of this thesis emphasise the established notion of users of the space are influenced by the characteristics and properties of this particular space. Users respond spatially to the situations in which they found themselves in, or have been forced to be. Findings showed that users adapt in spaces that temporarily inhabited by them. At the beginning of this research, it was explored how design studio is established and has been used, with the way in which space and elements of the space can be seen to impact on people's behaviour.

Developing the discussion about these issues led to new insights around both of these segments, design studio and users' behaviour. Exploring knowledge from various disciplines was important to find precedence, or approaches in mastering the art of recording people's experiences. Psychology and environmental psychology literature have been referred to in many situations as a reputable acquaintance.

On the level of methods, the researcher adopted and created a new method that can be added to the methods used by the architectural researcher, or researcher that research spaces and spatial configuration. The Student Designer Engagement Map as a form of

design research method, which have been designed for non-designers based on service design thinking, and methods that have been widely used and quite established in business and design for services, returned to be used on designers. Tailoring these methods and then merging them with some of the methods that have been used in architectural research. This has created an approach of investigation that could be relied on in researching around experiences and perceptions, as there are not much empirical studies that looks at the educational space physical properties, beyond post occupancy evaluation, and perceiving environment, associating these with emotions. This positions this research as being viewed as a framework in creating evidences that are based on environmental psychological knowledge, along with users' emotions in similar spaces. This can potentially change the way in which design studios are built and redesigned, managed and used.

This research has shed the light on the willingness for the students to collaborate, where the the doors of opportunities are open to do so. The researcher, through the recording experiences methodology and perceiving space through emotions, noted that whenever the space is designed to accommodate basics needs for being in the design studio (such as ownership, privacy, and well designed environmental control aspect), the opportunities of students to develop positive behaviours towards design education could be increased and be in favour.

In the same context, this research has been designed on the idea of building empathy while conducting the study, thus the adaptation of the Customer Journey Map and including the layer of emotion, which then have contributed massively to the depth of this research.

When analysing the data gathered from the methods used, as most of the data were in visual form, there was the need to design an analysis approach that captures and brings out the best of the data whilst providing the depth needed for this study; hence, there was the use of the photography anthropology and the visual discourse, along with the introduction to indexing system that again consists of a visual legend detailing pictograms.

This thesis sheds the light on the importance of the design studio and contributes to the literature of the main space where the architectural and design education takes place, as it researched the experience of the design studio on multiple levels, the investigation on the level of the studio itself, and the users and the aspirations. In some cases, tutors were involved in the investigation. Thus the findings have been discussed, through what was found to be working or not, what was success and mistaken. The importance of the findings was not to judge a particular case.

This research also can potentially claim that the design studio is a very essential aspect of the architectural education, not only as a pedagogical approach which has already been established (Ledewitz, 1985; Salama, 1995), but as a physical space that is appreciated and needed by the students of architecture and design, and thus this research makes a solid statement that argues those who claims that the activities of the design studio can happen anywhere.

When describing the processes and analytical phase, alongside the methods and the tools used, could in a sense provide interested people, from universities who wants to refurbish or build their studio spaces, and might want to consider students' insights regarding how the policies they are setting affecting their experiences in the space. This research can help architects, and researchers to use these combined methods to investigate another spatial experience, as another form of evaluation. Hence, this research contributes to the development of architectural education, and further provides a literature to close a small part of the gap in the architectural education literature around the students and the space. Moreover, this research, as in its tools and its methods could be added to the other forms of research tools available.

The researcher acknowledges that each university, each school of architecture, and students from different backgrounds are not to be treated the same. Thus, when looking for an ideal or optimum design for a studio space, some of the aspects found in the design studio were evidenced as enhancing students' experience or as being favoured by many of the students. This has been presented in Chapter 9, with consideration towards applicable ideas and spatial interpretations of the findings from the research in propositional guidelines. In educational research, and most of the qualitative research,

generalisation is not ‘possible’ or required. It is not possible because of the limited sample and the non-randomisation of it (Niaz, 2007). Although there is the argument of the criteria of internal generalisation and the external generalisation that was introduced by Maxwell (Maxwell, 1992). This research can be considered as a ‘reference’ for other design studios within the same university context or architectural education (internal generalisation) but might not work for generalisation to other context, as many other influences contributes to the design of the learning design studios, that could be investigated in future research with the need of more time, recruitment of team and a wider sample of design studios, it is the researcher believe after this research that generalisation could only be possible when demographics and cultural factors are considered when generating evidences within such a place and education context.

The research is intended to raise awareness of the rollercoaster of emotions that a student of architecture and design can be exposed to as a result of being in the design studio, whether because of the space as it is designed, or because of how the space is managed. The research provides these insights to the stakeholders of such a space – the university, the school of architecture or design and tutors—to empathise with the students.

The potential contributions that were listed above were related to the context of education and higher education, and especially bridging the gap in the knowledge between experiences and spatial configurations, between spatial design and users’ emotions, and as important, how emotions can be changed and formed according to spatial influence amongst other factors. There are other impacts of this research beyond Higher Education Institutions.

Precedents in retail design, health and recreational design showed how similar research and attention to spatial configurations and perception lead to conclusions and considerations to how, and why spatial design of particular spaces can potentially increase sale, speed recovery and give experiences that effect the loyalty of customers. As for the framework itself, it can be used to evaluate other spaces beyond the design studio and architectural education. Where in this thesis the focus has been the design studio in the higher education institution, the framework that have been developed can in

fact shaped to be used for investigating the perception of users of other educational and non-educational spaces, looking at their emotions and feelings through their time and their activities within the space in question, but, importantly, to acknowledge the fact that each space is unique in terms of its users and their aspiration.

This research was based on the context of focused ethnography, which allowed in-depth investigation for the subject and from multi angles, which in the case of this research were the space, the users, and the policies that were imposed on the space and the users. This research can provide an expansion in the knowledge in the context of the fields that are concerned with ethnography as an approach or with ethnographical research.

To recapitulate, this research could potentially contribute on many levels to:

1. The theory of learning design studio, the architectural and design education and the higher education institutions.
2. The methods and the methodology used in this research. This framework can be adopted by architects and researchers that would like to investigate spaces.
3. The framework as well can be used as a tool to help designers and architects to include, and empathized with users that they are designing for/with.
4. The findings from the case studies together with the propositional guidelines presented in Chapter 9 can potentially used to help understanding the learning design studio.
5. These design applications and considerations also can be used by designers and architects as precedents when they are designing a learning space, or refurbishing an existing one.
6. Universities and schools of architecture and design can potentially benefit from looking at the impact of the spatial decisions that they make on the well-being, attainment, performance and feelings of the students. And that well designed learning space can cultivate positive aspired behaviours.

10.3 Limitations

This research has met various challenges and limitations that disturbed the initial plan and the flow of the steps. These are as follows:

- The limited number of literature and the existing empirical research carried out in the realms of school design and workplace design, and the spaces designed for adult learners, which the design studio is categorised within this gap.
- The research was limited to the context of the United Kingdom and in particular England, and was subjected to the curriculum used in conjunction to the standards of this context, and that limits the findings to this particular region. This research could have benefited from exploring studios in other countries for generalised conclusions; however, this could be carried out in future research.
- There were no respondents to the survey, and accordingly did not have access to design studios. Thus, the case studies were conducted after using contacts to be introduced to the key persons who allowed the study to be conducted.
- Some of tutors were not interviewed because of their unavailability. And some students of particular studios could not participate in the focus group as they had site visits, or engaged in other lectures, or were working towards a submission.
- The focus groups were not uniformed as there was popularity in some of the studios more than the others. The researcher tried to split the numbers to be uniformed but the other constrain was the time.
- Due to the uniformed number, and the constrained access to the studios, the demographics of the participants were not considered as a part of this research, and will be addressed in future research.
- The duration of the research has limited the cases, and the covered aspects, most of the time, were consumed by the analysis and interpretation of the qualitative data.
- There were constrains in the financial aspects that have limited the time spent in each case study, and that is why the focus group, and interviews could not be rescheduled for number of times.

10.4 Future Research/Possibilities

This thesis proposes a framework of investigating relations in physical spaces between the users of these spaces and their behaviours, where this research targeted the higher

education institutions and focus was on the design studio in architectural education as it was understudied spatially.

In this research, demographics were not fully studied and filtered except for the case where students were all from one category which is internationals. The results from such group have been substantial, and the results could generate more intense findings when gender, financial level, educational background and ethnicity are taken into consideration and therefore part of the research design.

On the same level, there is a huge difference between the design studio as seen in the United Kingdom and between another familiar learning design studio to the researcher, as a lecturer, and a user of Design studio at the University of Bahrain, an investigation on the users' perception and value of the learning design studio in the Kingdom of Bahrain, starting with the University of Bahrain, and extending it to look at other learning design studios. Considering factors that differs from this research, such as the difference in perceptions of users between government universities and private universities offering design and architecture studies. The impact of students that share a similar cultural background and solely home students, as per the case in the University of Bahrain, and the effect of having students from the same gender on the behaviours within the space. There is the possibility of extending this research to cover a broader area of the gulf region, whilst also raising awareness of the impacts of spatial design of learning spaces on students' behaviour, and seeking to identify solutions to cultivate positive behaviours, such as collaboration in learning spaces through spatial configurations.

The other outcome of this thesis is applicable aspects that can be beneficial to consider during the process of designing, refurbishing, converting or using learning design studio, as seen in propositional guidelines presented in Chapter 9, bearing in mind that these findings are not universal, but adaptable, and can be tailored to each design studio in question. Notably, these applications have been based on the findings of the case studies with respondents that varied and are not representative of each university. To take this further, doing this research across all the levels of the design studios of Universities, can generate evidences that again could be tailored to each individual case

of learning design studio.

The framework proposed has clearly showed its effectiveness on generating insights and in-depth understandings of the perceptions of users concerning the space. A further contextualisation of the research, towards other spaces in educational context, or other contexts can be investigated.

Through teaching design studio, the focus in the studio will be to educate the future architects and designers to the importance of including users in the design process, and to learn how to listen and interpret their views and needs in the designed space. Through an intensive, focused ethnographical practice, reflecting on the methodological approach of this research, and building upon it to come up with some tailored methods to suit the project on hands, with students taught about the future impacts of their design decisions on the users of the space, and the power of the environment on users, building their empathy to design with users, for users.

10.5 Recommendations

The discussion of findings of this study generated spatial design considerations that have been articulated in Chapter 9, where a proposed framework of researching space has been developed. In summary, this thesis suggests the following recommendations addressed to the different stakeholders in the design studio, and to architects and designers, as well as to researchers.

1. To the decisions makers in design and estates department at Universities and Educational institutions
 - a) Considering the effect of the designed design studio on the students, referring to the recurrent themes of the case studies, adapting the ones that apply to their situation. And paying attention to the propositional guidelines developed in Chapter 9.
2. To the professional architects and designers in the practice
 - a. Include the users and people in the design process by using tools and methods that allow to generate insights from potential users on how

the space should be used and then design the space accordingly.

- b. Considering the holistic users' experience when designing a space, thus putting the designs and plans for the building or the space as an application for the user's experience. And the design should work to serve the visualised experience that wanted to be created. Allowing the building to work coherently with the other elements to set the best experience possible for the people.
- c. Designing with room for flexibility, where users can adapt and adopt the space, even if temporarily. Thus, helping the users to inhabit and own the space, which impact the way in which they experience the space, and also impact their behaviour positively.

3. To tutors in Architecture and design schools

- a. The tutors need to design a curriculum that teach the future architects and designers to empathised with the people who they design for, knowing that each design decision will influence the users of the space they design and build.
- b. Design tasks and activities that teach the students how to work in harmony and in collaborative way. As architecture and design practice is not an individual practice, but collaborative in its nature.
- c. Encourage students to work with people and listen to their views, ideas and insights on the design.
- d. Teach the students the power of the spatial arrangements and configurations on the behaviour of the users. And encourage future research on the subject.
- e. Educate the future architects and designer to think of how the users of their buildings can experience the space. Teaching them to set scenarios and personas of the users and then designing accordingly. Or work with real people, and designing for specific experiences.
- f. Include the ideas of the effect of the space on the emotional estate

and feelings of the users.

This research thesis started with an observation made by the researcher whilst tutoring students of design, and how they made various alterations to the studio in order to facilitate collaborative work (Figure 10-1). It did not seek answers, but rather sought understanding of the process. The process of this study have impacted on the researcher herself, knowing the potentials that can be explored using the hybrid methodology and methods that have been tested in this thesis. And the potential of recreating other methods with the combination of disciplines from the researcher background such as Service design and the Interior Design and Architecture, within the same context and beyond as well. This has emphasised the researcher position, being able to contribute, even a little to both disciplines, whether with a new method/tool that could possibly help the service designers record experiences. Or to interior designers and architecture to understand clients. As well as, in the process of education of these designers.



Figure 10 - 1 The inspiration of the research study, collaborative work in Graphics course at the University of Bahrain .Source: Author



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APPENDIX 1: THE RESEARCH PICTOGRAMS LEGEND

Research Pictograms

Social Aspects



Inhabitation



Privacy



Peer Pressure



Community



Security

Circulation / Movement



ID Access



Storage Spaces

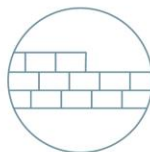


Door Locks



Movement

Enviromental Control Aspects



Building Materials



Lighting

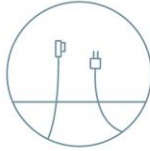


Heating



Acoustics

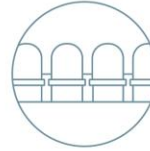
Furniture & Special Features



Power Access



Room Layout



Seatings

Functions



Socializing



Researching



Technology



Work Space



Eating & Drinking



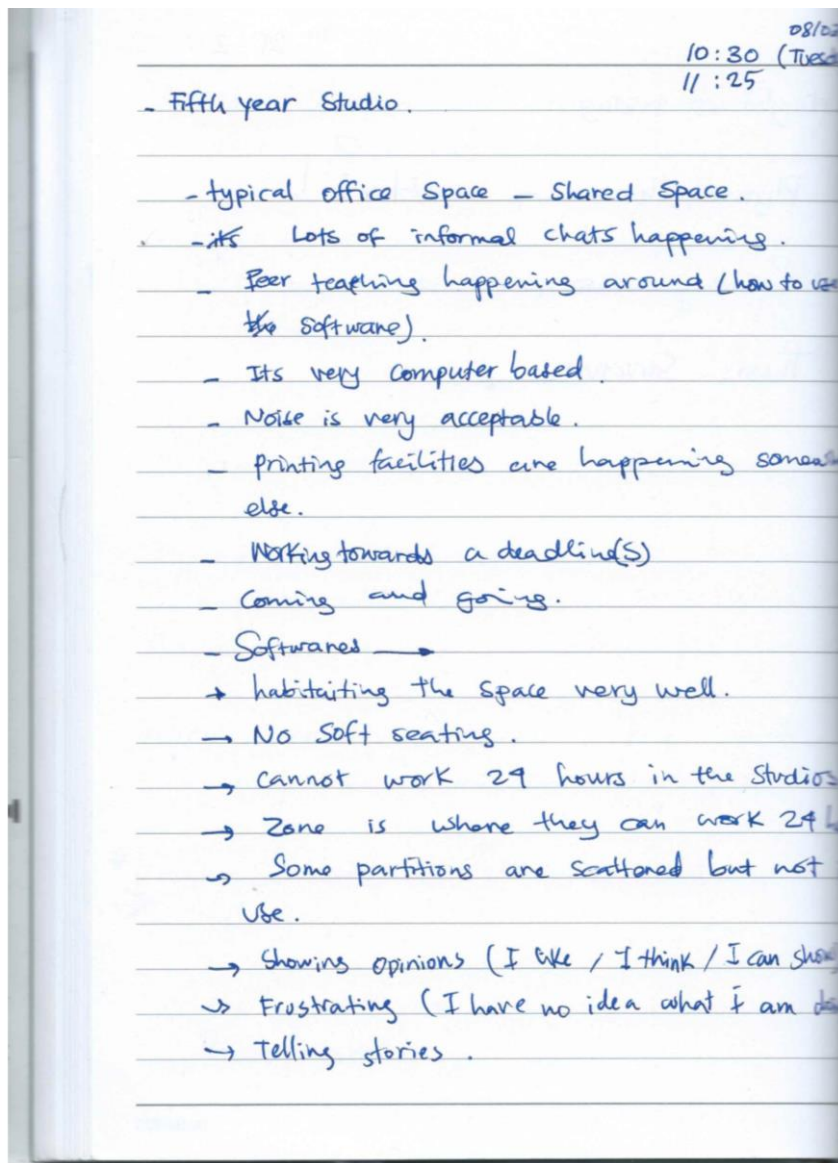
Brainstorming



Relaxing

APPENDIX 2: OBSERVATIONAL NOTES

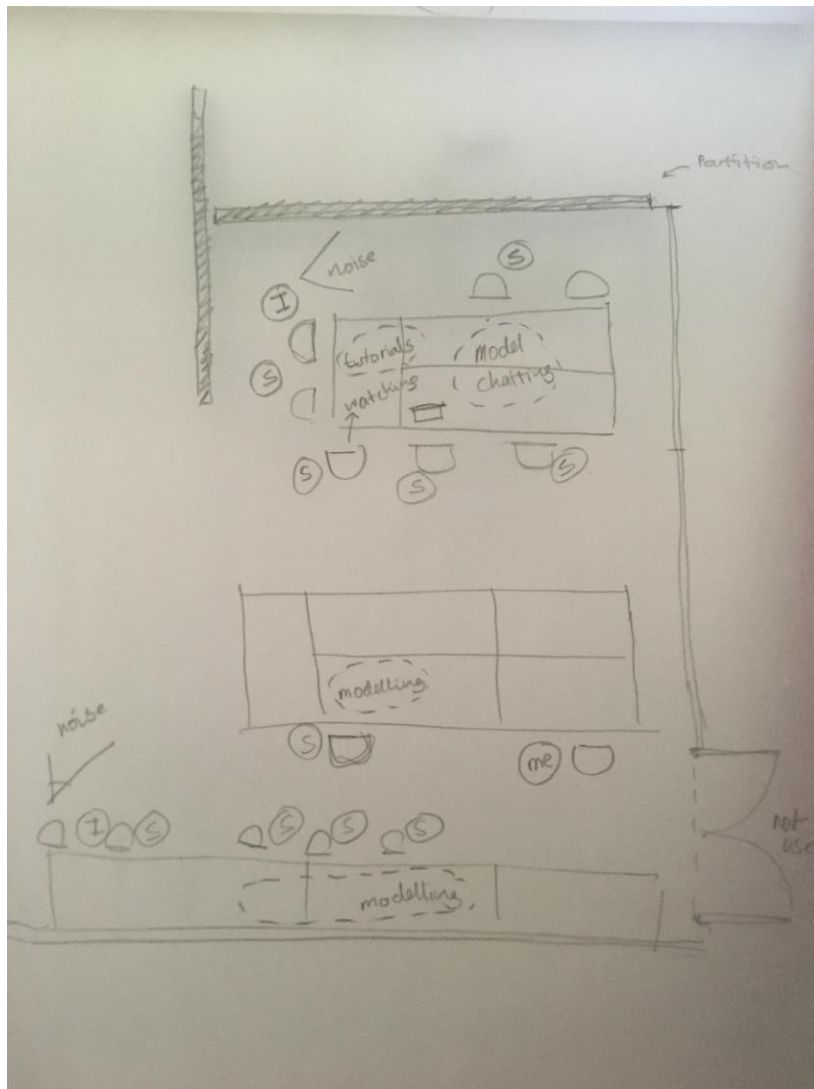
- A page from a diary that have been used in the field to record observations of the researcher. The observations include the types of interactions taking place within the space observed. These are either student to student, student to tutor, but mainly student with the space. The observation diary recorded the period of time that these observations took place within.



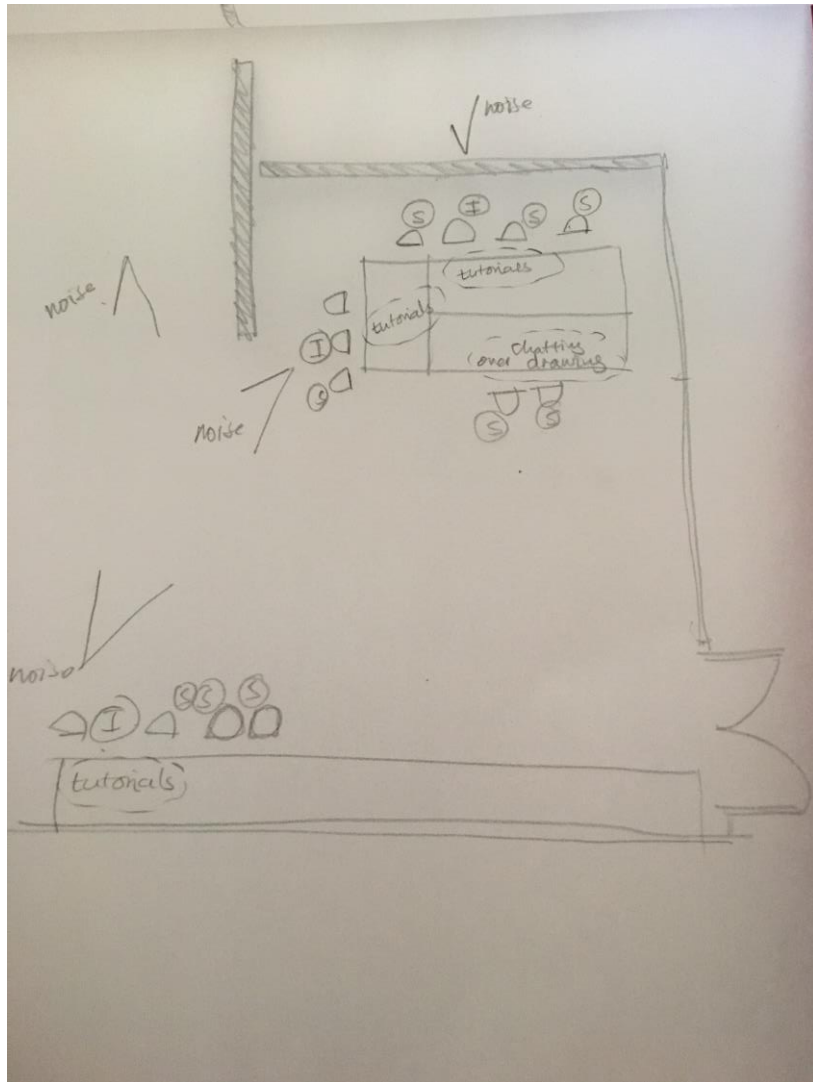
A2 - 1 A page from a diary, used to record observational notes.

- Annotated Plan is another type of observational note that used to record the changes of the space over a period of time. This observational note record changes on the space, the users' spatial changes, and the changes within the environment of the space such as in the noise level.

Northumbria University
First Year design studio
During Tutorials



A2 - 2 Annotated plan at the beginning of the observational session



A2 - 3 Annotated plan at the middle of observational session

APPENDIX 3: ETHICS AND INFORMATION SHEET

A3.1 Approval Letter

After setting the methodology and the methods that are going to be used in this research. A formal application to The Ethics Committee at the University of Sheffield has been filed, stating the procedures and the risks for the participants and the researcher.



Downloaded: 31/05/2015
Approved: 21/05/2015

Reem abbas ebrahim ali ahmed Sultan
Registration number: 140105302
School of Architecture
PhD in Architecture

Dear Reem abbas ebrahim ali ahmed

PROJECT TITLE: Design Studios: Investigating User Experience and Improving the Physical Settings
APPLICATION: Reference Number 002239

On behalf of the University ethics reviewers who reviewed your project, I am pleased to inform you that on 21/05/2015 the above-named project was **approved** on ethics grounds, on the basis that you will adhere to the following documentation that you submitted for ethics review:

- University research ethics application form 002239 (dated 16/04/2015).
- Participant information sheet 007278 (16/04/2015)
- Participant information sheet 007152 (13/04/2015)
- Participant information sheet 005185 (09/02/2015)
- Participant consent form 007279 (16/04/2015)
- Participant consent form 007153 (13/04/2015)
- Participant consent form 005186 (09/02/2015)

If during the course of the project you need to [deviate significantly from the above-approved documentation](#) please inform me since written approval will be required.

Yours sincerely

Email Arc Ethics
Ethics Administrator
School of Architecture

A3 - 1 The approval letter for the ethics issued at the University of Sheffield

A3.2 Information Sheet

University of Sheffield

Design Studios: Understanding Relations Between Built Environment and Creative Collaborative Learning : A Qualitative Evidence-Based Design Approach.

INFORMATION SHEET FOR PARTICIPANTS

You are being invited to be involved in this PhD. research study. Before you decide whether you want to take part, it is important for you to understand why the research is being done and what your participation will involve. Please take time to read the following information carefully and discuss it with other members of staff if you wish. Please contact me if anything is unclear or if you would like more information. Take time to decide whether or not you wish to take part.

Thank you for reading this.

What is the purpose of the study?

This part of the PhD. study aims to understand the physical importance of a designed studio space for its users.

Why have I been chosen?




You are being invited to take part in this study, because you use Studio spaces at your university. Your experiences and views are valuable to this research.

What will participation involve?

The session would take a place within the University of Sheffield premises. During this session, you will be asked to work on new method of recording interaction with the space by working in groups to draw a journey map. You are more than welcome to start using the method used in the workshop for your own study and research. It is intended as an opportunity for you to express your views on the design of the Studio space. The workshop will be tape recorded and videoed, and later transcribed into text form. Video recordings would be solely for the research team to take notes of what they missed within the session and would not be used into the dissemination of the research. You would be very welcome to a copy of the final report.

As part of the presentation of results, your own words may be used in text form. This will be anonymised, so that you cannot be identified from what you said. All of the research data will be stored as digital and hard copy at The University of Sheffield till 1 year after the researcher completed her degree. Transcription will be used anonymously for future research if permitted by you.

Please note that:

-  You can decide to stop the session at any point
-  You need not answer questions that you do not wish to
-  Your name will be removed from the information and anonymised. It should not be possible to identify anyone from my reports on this study.

It is up to you to decide whether to take part or not. If you decide to take part you are still free to withdraw during the session or any time and without giving a reason. If you withdraw from the study all data will be withdrawn and destroyed.

If you do decide to take part you will be given this information sheet to keep and be asked to sign a consent form.

APPENDIX 4: IC PROJECT VISUALS

A4.1 The IC Project

Parallel to the research on design studio users' experience, another type of study has been initiated as a collaborative work. This latter study took place within a prototyped studio space in the Information Commons at the University of Sheffield, with common space used to generalise the values of the studio space to other disciplines. This was a mutual work between the researcher and René Meijer, a Learning Architect, and a PhD candidate at the University of Sheffield. And the intension to make the designed space as a controlled experiment to observe the change of behaviours in regards to the change in spatial aspects of the public design studio. And then to listen to the experiences of the students within this space, while looking at how the space is inhabited temporarily by the visitors of the IC.

The study objective was centred on Higher Education as increasingly valuing collaborative and practical activities as a key component of their learning and teaching strategies. The introduction of 'Learning and teaching strategy' at the University of Sheffield is a very high-profile example of this. Furthermore, whilst collaborative spaces are increasingly common as part of the learning space provision on campus and in libraries, spaces for practical work often remain departmental. Examples of these spaces include the engineering workshops and the creative design studios in the Architecture department.

Through the exploration of the creative disciplines learning and studying spaces, a collaboration project was initiated between the library of the University of Sheffield and researchers in the learning environment. The project is to create a common space for the student of the university, which would allow the students to work, discuss and collaborate together. The space would be physically designed so as to relate to the Studios of Design, based on the concepts and ideas researchers are considering within their ongoing PhD research studies. Reem & Rene emphasise, in this regard, that 'the main aim of refurbishing the space within the library is to help structure the process of creativity and accordingly provide students with the best user experience in their space, with the purpose to provide such a space within the University of Sheffield centred on

facilitating creativity. The approach is to move from constrained thinking to releasing creativity in a supported environment. The flexibility of using the space and availability would attract students to use it and embrace its aims.’

After initiating the study, a design has been put in place for the selected space at the IC; this was given to the researchers by the library manager to the building and estate department. The Information Commons is one of four sites of the university’s library buildings. The library is open 24 hours a day, seven days a week. It serves all students from the numerous programmes and disciplines.

Following careful consideration to the available sites within the Information Commons, the site selected by the researcher is located next to the staff area within the first floor. Currently, it is open to students to use existing computers. There are some sofas for informal discussions, as well as bookshelves from St George’s Library, that are temporarily stored waiting to be moved for The Diamond Library in summer of 2016.

Logical constraints mostly lie within the operational aspects of the space, where such aspects are related to health and safety. In terms of the use of the space as a modelling platform, scalpels and cutters are essential to the process. On the other hand, providing these instruments within a public domain requires constant supervision. The solution to this issue can be seen through locating the studio next to the staff area, and by taking the Arts Tower experience as evidence of the maturity of students.

The university allocated a sum of GBP60,000 towards refurbishing the space and providing the level of support needed to operate the studio space and train various students’ interns on delivering workshops on the way in which the space can be used as a creative platform, as well as to allocate an ambassador to promote the space.

The design phase would be taking place within the second- and third-quarter of the academic year 2014–2015. Furthermore, the actual execution of the refurbishment would take place within the summer vacation.

The recruitment and the training of students will take a place within the third term, whilst the space as a whole would be officially ready for use at the beginning of the following academic year, i.e. 2015–2016. Furthermore, the actual design should have been executed around the summer vacation, where the usage of the IC is at a minimum

level; thus, the experiment would take place within the next academic year. Importantly, this would feed into the objective of how the experience of the studio could be generalised for the use of all disciplines within the university. It would also try to provide an opportunity for students of the Architecture and Fine Art schools to find a suitable space, so as to allow them to extend their study experience beyond the walls of their schools.

In order to capture the interaction and feedback, the plan was to conduct an observation within the designed public studio space, as well as carry out focus groups and a workshop design in order to fully capture the ways in which users of the space, despite not being from a design background and therefore using the space temporarily, valued the studio setting. First, a desk research was carried out in order to identify similar projects within the other universities around the world (Jamieson, 2007) (Huijser *et al.*, 2008). One of the latest case studies that can be referenced is the University of Greenwich, which has more recently moved to their new library, and Architecture and Design school building.

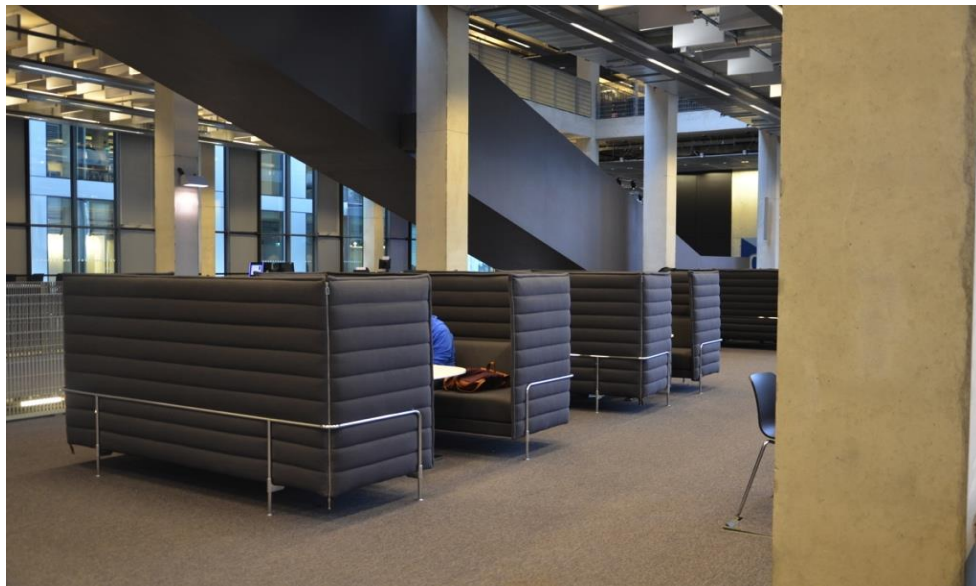
A4.2 The Greenwich Site Visit

Overview:

The building for the School of Architecture and Landscape in Greenwich, which opened in September 2014, has received a wealth of attention in the press. The building was designed to be an innovative architectural learning space, collocated with a university library site. As this merger of the affordances of architectural learning and library spaces is at the heart of a new project for the Information Commons, a site visit was planned. Accordingly, the researchers were shown around by Virginia Malone, the library site manager.

In regards coverage in the press, this focused significantly on the external and aesthetic aspects of the building, and seemed to discuss very little about the inner pedagogic functioning of the space. Concerns pertaining to this lack of emphasis remained throughout the visit, as the internal spaces seemed to lack originality, diversity and soul. The collocation of the creative schools with the library also seemed not to have inspired a

synergetic thinking about spaces or services, with the two running very separately in very separate parts of the building. The majority of the space seemed very cold (Figure 16), with an abundance of exposed concrete, albeit accented by some primary coloured furniture and way findings. Nonetheless, the dominance of the furniture centred on black and white. Furnishings were provided by Vitra. The researcher's own impression was that many of the concerns outlined in this case study were shared by some of the staff, with mentions of poor engagement processes with the architects.

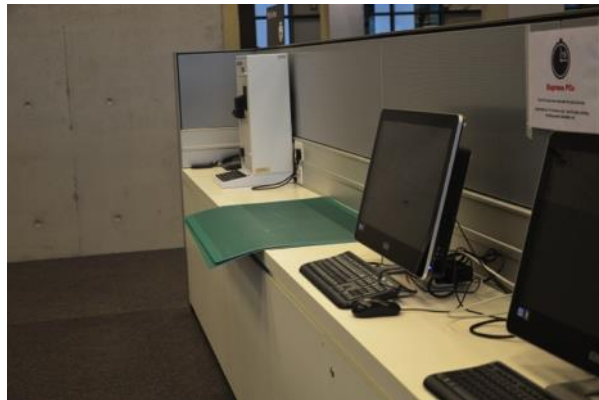


A4 - 1 The overall atmosphere of the Library. Source: Author

Library Spaces:

Much of the library was still taken up by traditional bookstock—equating to a total of 130,000 volumes. Moreover, library learning spaces were few:

- Predominantly large white double tables, either with or without PCs.
- Two areas filled with booths.
- Bookable group rooms with plasma screens, but no whiteboards.
- Displays of new books, exhibited in a way that imitates the retail approach.
- Few loose chairs and cafe tables, which seemed to ‘litter’ dead space under the stairs, etc.
- Printing areas equipped with normal printing facilities and special plotters serving all students (Figure 17 and Figure 18).
- Intentions to provide MAC computers that are not solely for students of the Design majors.



A4 - 2 Ordinary Printing Facilities. Source: Author



A4 - 3 Plotters. Source: Author

A large cellular silent space existed on the top floor, but also silent areas that were not cellular. Power in learning spaces was provided via floor boxes and loose conduits, which had already started to break. There was no central library counter or helpdesk, but instead single-person help points were distributed on each floor. Despite being a converged (IT services + library services) department, service points were either IT support or library support.

Academic Spaces:

The ‘other side’ of the building, which is located behind separate gates, had the same design attributes, the use of the same elements of design, such as furniture and way findings, as well as the lack of book stock making the spaces seem much more open. While there were some dedicated ‘seminar rooms’, a large proportion of the teaching took place in open spaces with movable partitions, which also functioned as studio spaces when not in use. The spaces themselves were found to contain:

- Open floor of studio spaces that can be separated by moving screens and partitions
- Moving Instructor stations.
- Crit space or ‘Pit’, positioned at the centre of attention by increasing the height over it, making it almost 10 metres. Furthermore, making it visually accessible from the upper floors by the balcony open on it.
- Plotters, printing facilities and submission room.
- Workshop area, retail shop, gallery, exhibition area and lots of specialised spaces, such as media rooms and production rooms.
- Instructor-led rooftop spaces for landscape department.

The ‘leave it as you find it’ setup, combined with a total lack of student storage, has meant that the space was clean and empty, rather than being instilled with the vibrant creativity of studio spaces in which artefacts and creative processes are permitted to be on display. This seemed unsatisfying and contrary to the motivations for introducing spaces such as these within the IC. Nonetheless, as the IC will suffer similar challenges (i.e. as a general student space it would not be possible for students to permanently

inhabit it), there is a need for careful consideration to be directed towards how it can be made into a space that is inhabited temporarily, and when shared can still be imbued with a creative spirit.



A4 - 4 Open Studios. Source: Author

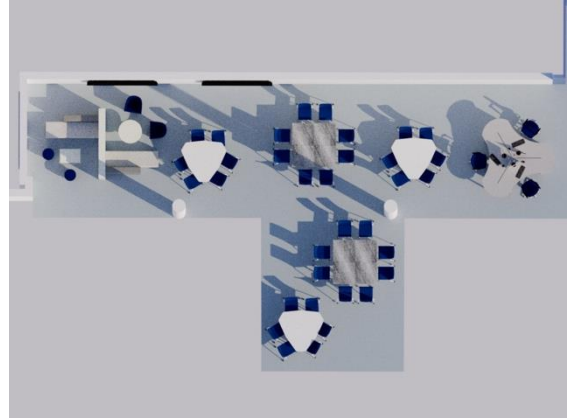


A4 - 5 Crit Pit. Source: Author

A4.3 The Design



A4 - 7 A 3D View to the design of the Public design studio in the IC. Source: Author



A4 - 6 A top view of the Public design studio in the IC. Source: Author



A4 - 8 A perspective for the designed public design studio in the IC. Source: Author



A4 - 9 A perspective for the designed public design studio in the IC. Source: Author

APPENDIX 5: PHOTO DOCUMENTATION & STUDENTS' DRAWINGS

A5.1 Northumbria University



A5 - 1 The Door to the first year design studio at the University of Northumbria. Source: Author



A5 - 2 The First year design studio at the University of Northumbria. Source: Author



A5 - 3 The working space and forms of inhabitation at the design studio at the University of Northumbria. Source: Author



A5 - 4 The light partitions and the impact on the acoustics at the University of Northumbria. Source: Author



A5 - 5 Forms of Inhabitation at the University of Northumbria. Source: Author



A5 - 6 Claiming the table as a form of belonging and ownership at the University of Northumbria. Source: Author



A5 - 7 Using the walls as a pinning point at the University of Northumbria. Source: Author



A5 - 8 The provision of a storage space but not to be used by students at the University of Northumbria. Source: Author



A5 - 9 The access to the fifth year design studio at the University of Northumbria. Source: Author



A5 - 10 The working space at the fifth year design studio at the University of Northumbria. Source: Author



A5 - 11 The partitions that provide privacy in one side of the University of Northumbria fifth year design studio. Source: Author



A5 - 12 Food in the design studio as a form of inhabitation and sense of community. Source: Author



A5 - 13 Depending on the Artificial lighting and the blinds at the fifth year design studio in the University of Northumbria. Source: Author



A5 - 14 Office like atmosphere at the fifth year design studio at the University of Northumbria. Source: Author



A5 - 15 A form of inhabitation at the University of Northumbria fifth year design studio. Source: Author



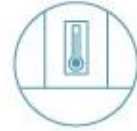
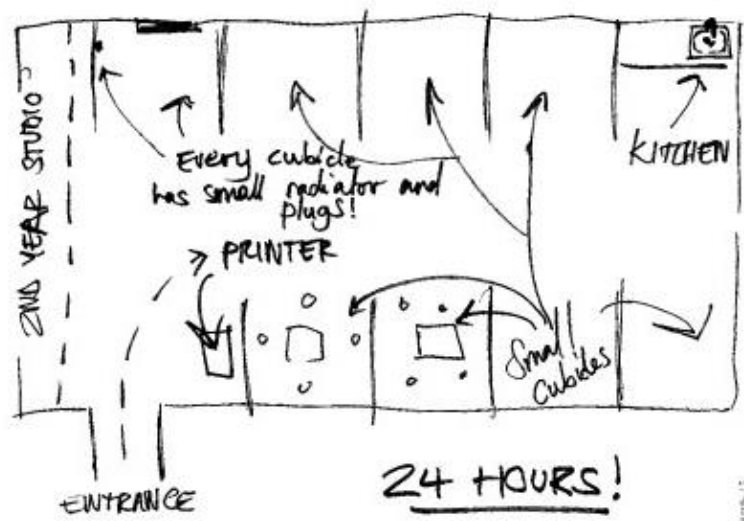
A5 - 16 The Zone at the University of Northumbria. Source: Author



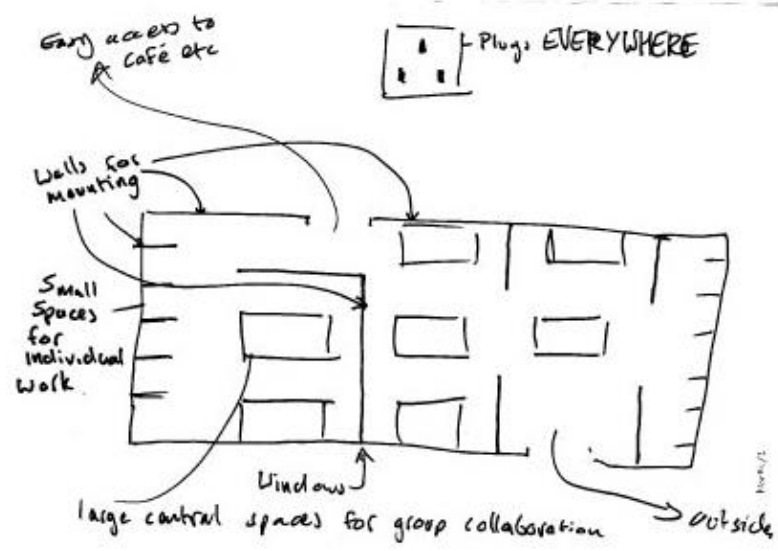
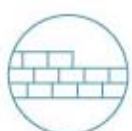
A5 - 17 The working space at the Zone, a temporary space for the students of the Northumbria University. Source: Author



A5 - 18 The variation of learning spaces at the Zone. Source: Author

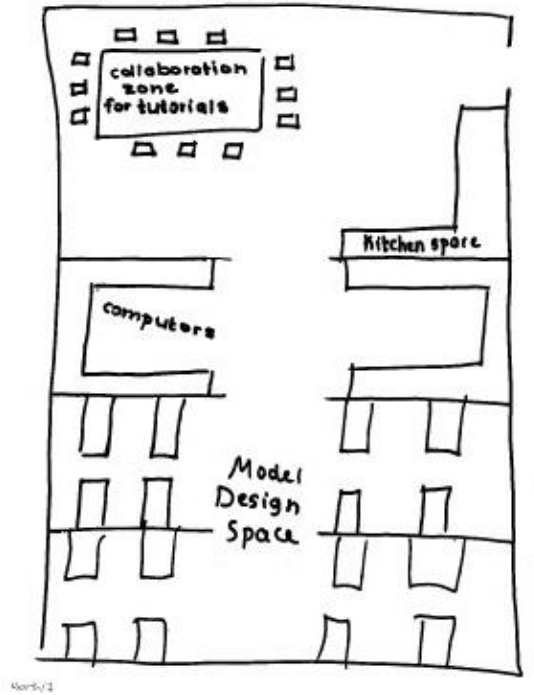


A5 - 19 Northumbria University Student's drawing for the optimum design studio. Source: Author



A5 - 20 Northumbria University Student's drawing for the optimum design studio. Source: Author

Comfy seats - High ceiling
light - mostly windows



A5 - 21 Northumbria University Student's drawing for the optimum design studio. Source: Author

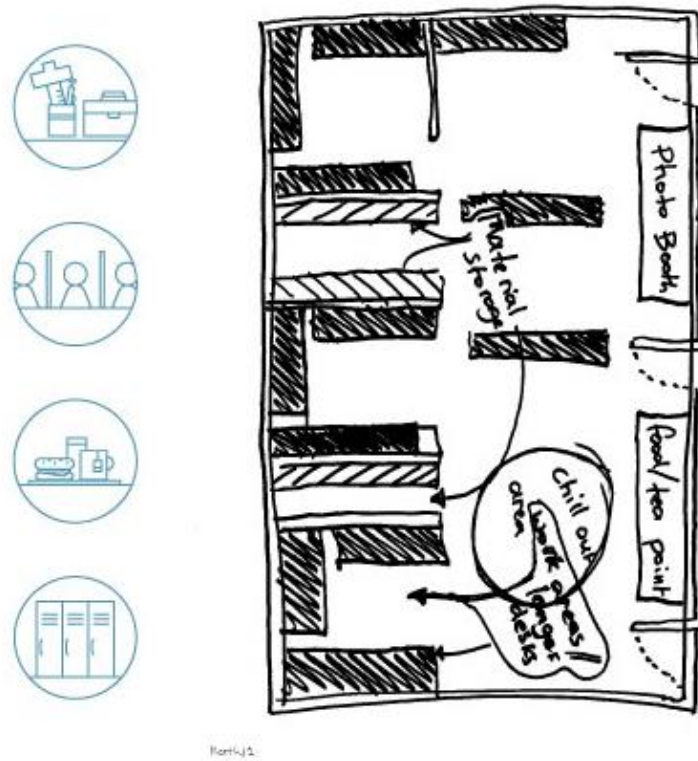
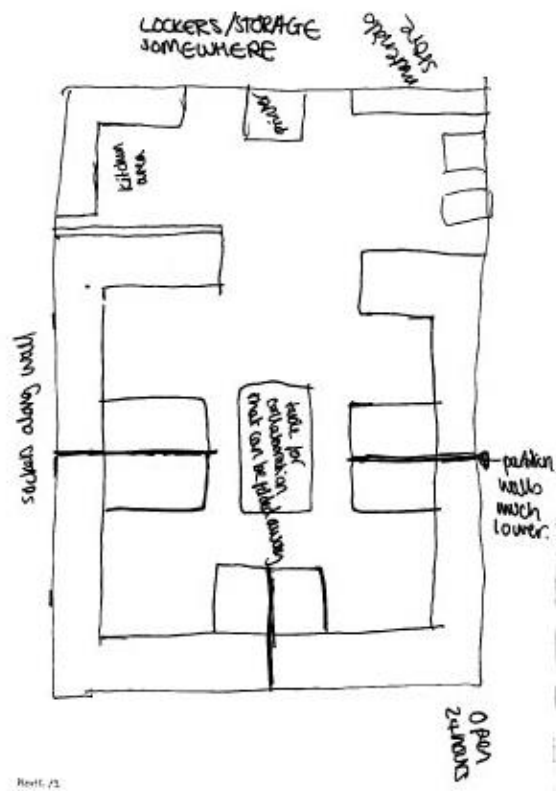
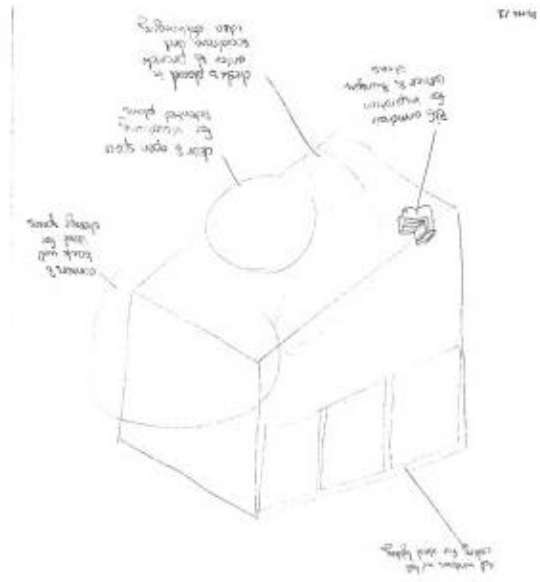


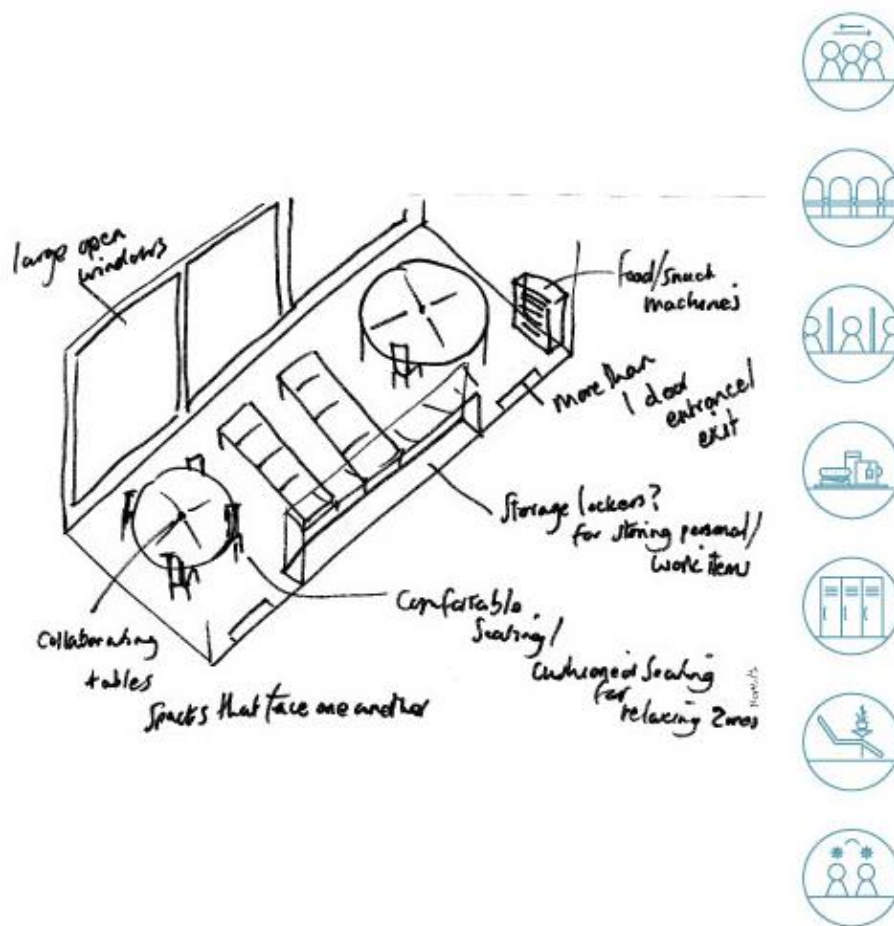
Figure 1 Northumbria University Student's drawing for the optimum design studio. Source: Author



A5 - 22 Northumbria University Student's drawing for the optimum design studio. Source: Author



A5 - 23 Northumbria University Student's drawing for the optimum design studio. Source: Author



A5 - 24 Northumbria University Student's drawing for the optimum design studio. Source: Author

A5.2 The University of Newcastle



A5 - 25 The provision for printing facilities at the University of Newcastle first year design studio. Source:



A5 - 26 The research area and working spaces at the first year design studio. Source: Author



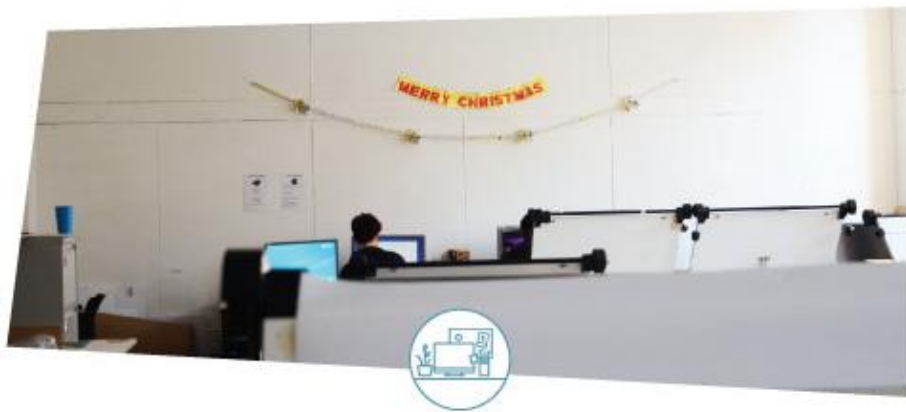
A5 - 27 The research area at the first year design studio. Source: Author



A5 - 28 Forms of inhabitation at the first year design studio at the University of Newcastle. Source: Author



A5 - 29 Relaxing seat at the first year design studio. Source: Author



A5 - 30 Tesnsels as sort of inhabitation. Source: Author



A5 - 31 Students photos list at the door entrance. Source: Author



A5 - 32 The workspace crowded with models and materials. Source: Author



A5 - 33 The entrance and printing facilities at the fifth year design studio. Source: Author



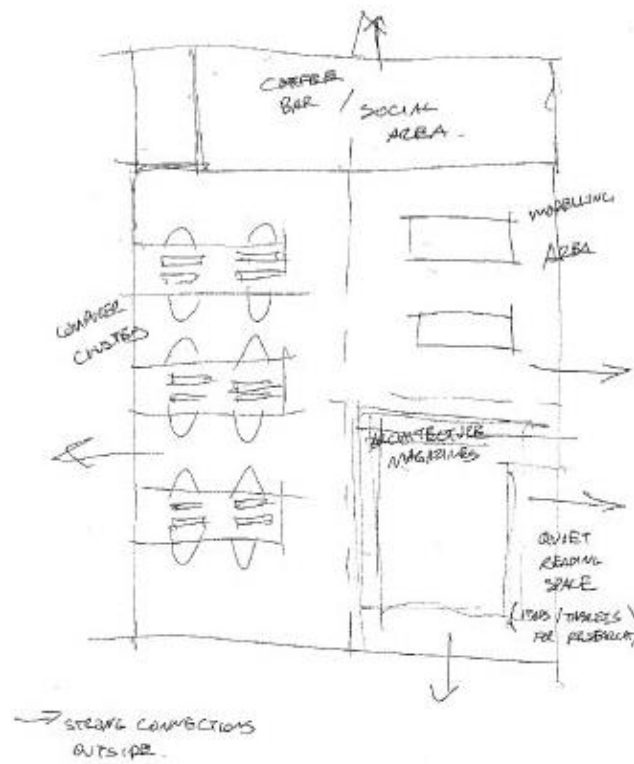
A5 - 34 The fifth year design studio atmosphere. Source: Author



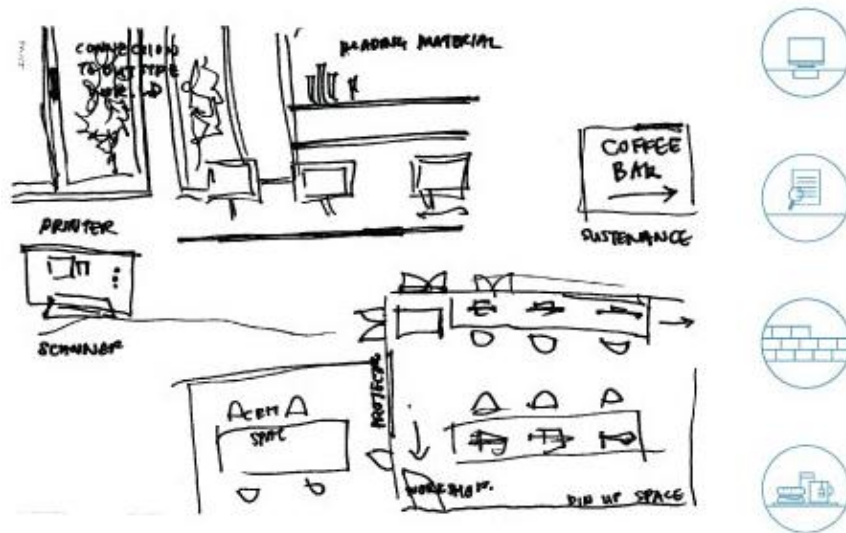
A5 - 35 The work space at the design studio. Source: Author



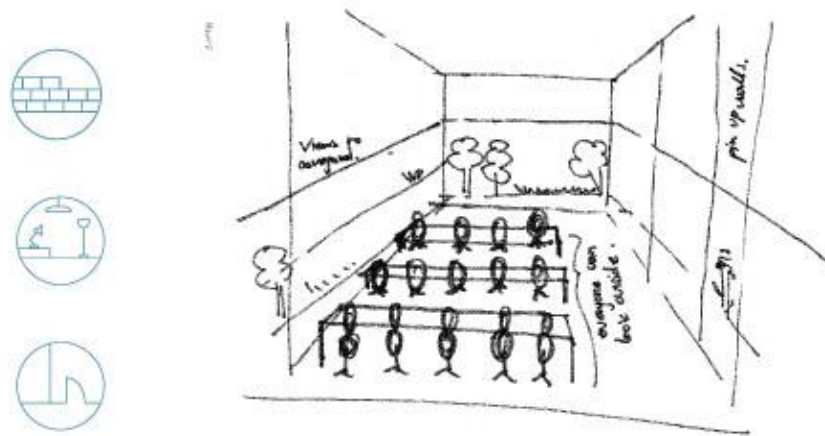
A5 - 36 Shelving unit at the fifth year design studio at Newcastle University. Source: Author



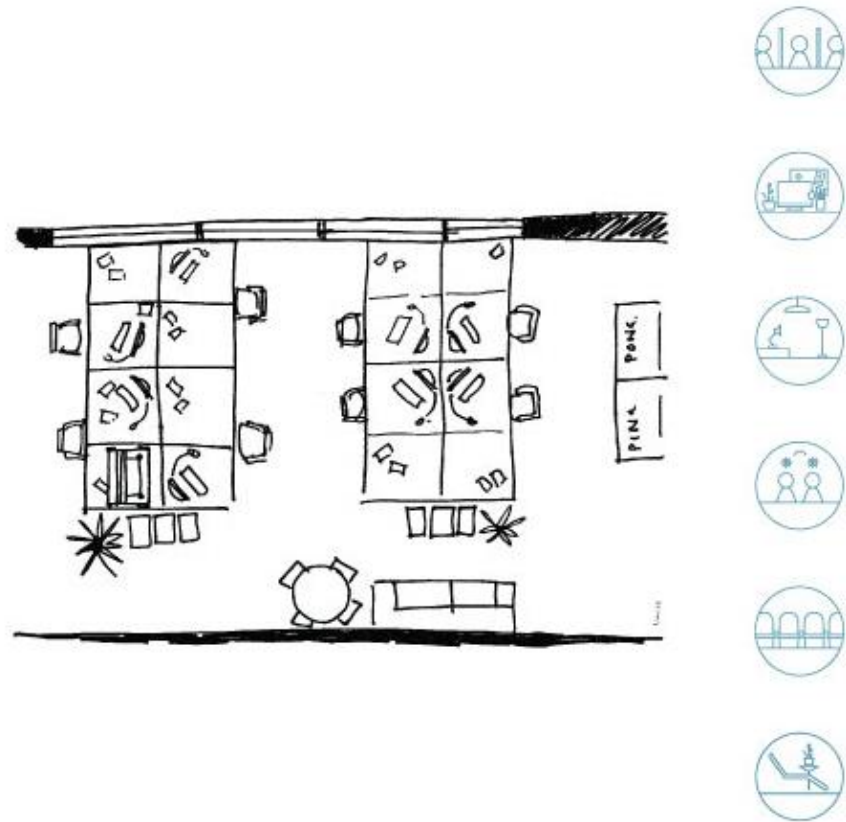
A5 - 37 The University of Newcastle Student's drawing for the optimum design studio. Source: Author



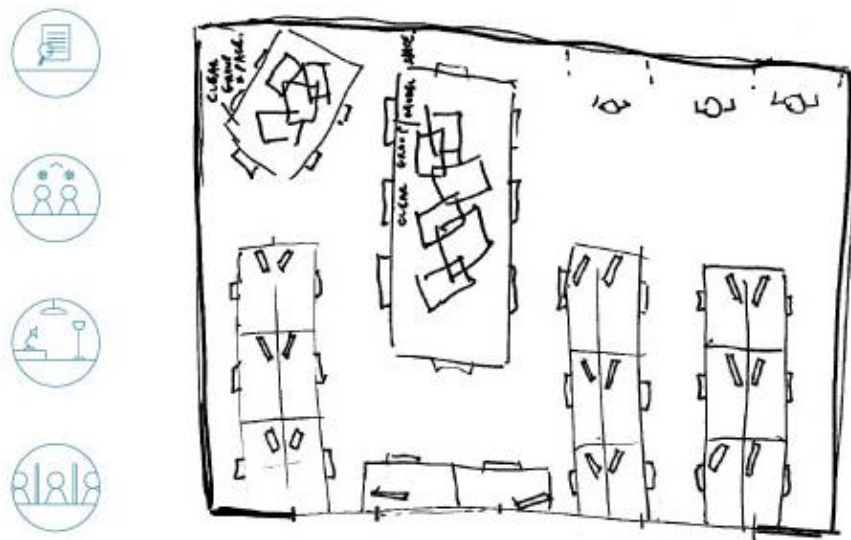
A5 - 39 The University of Newcastle Student's drawing for the optimum design studio. Source: Author



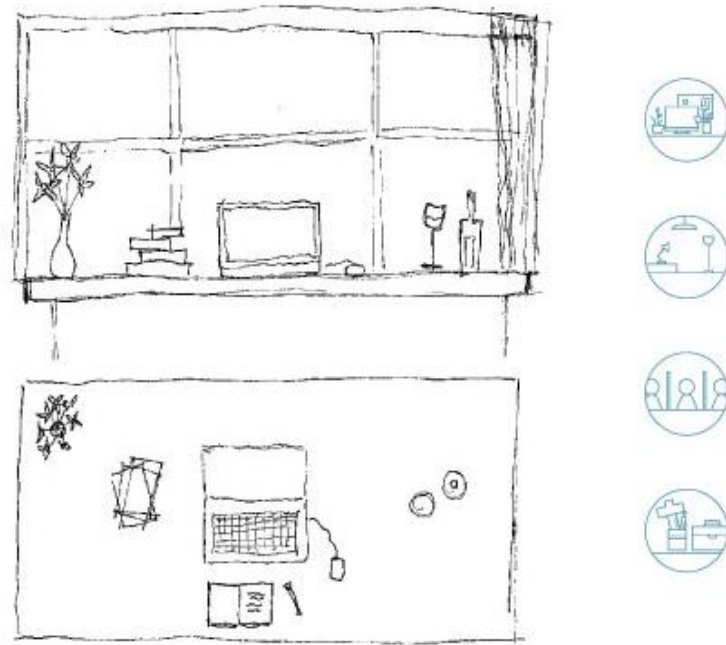
A5 - 40 The University of Newcastle Student's drawing for the optimum design studio. Source: Author



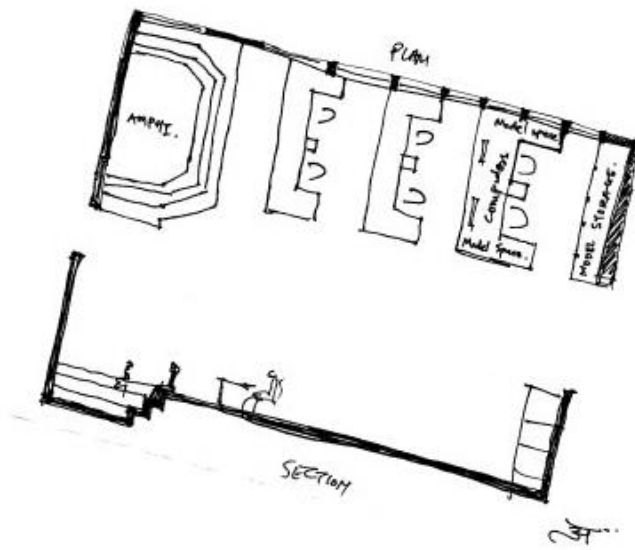
A5 - 41 The University of Newcastle Student's drawing for the optimum design studio. Source: Author



A5 - 42 The University of Newcastle Student's drawing for the optimum design studio. Source: Author



A5 - 43 The University of Newcastle Student's drawing for the optimum design studio. Source: Author



A5 - 44 The University of Newcastle Student's drawing for the optimum design studio. Source: Author

A5.3 Plymouth University



A5 - 45 Artificial Lighting and acoustics panels at the fifth year design studio in Plymouth University. Source: Author



A5 - 46 Forms of Inhabitation at the design studio. Source: Author



*A5 - 47 The window ledge being used to keep models and other things that prevent the blinds to shut properly.
Source: Author*



A5 - 48 Forms of Inhabitation. Source: Author



A5 - 49 Other type of seating for relaxation used in the design studio. Source: Author



A5 - 50 Research area provided within the fifth year design studio at Plymouth University. Source: Author



A5 - 51 A pantry area for students within the design studio. Source: Author



A5 - 52 Shelving units for keeping models. Source: Author



A5 - 53 Scanning facility. Source: Author



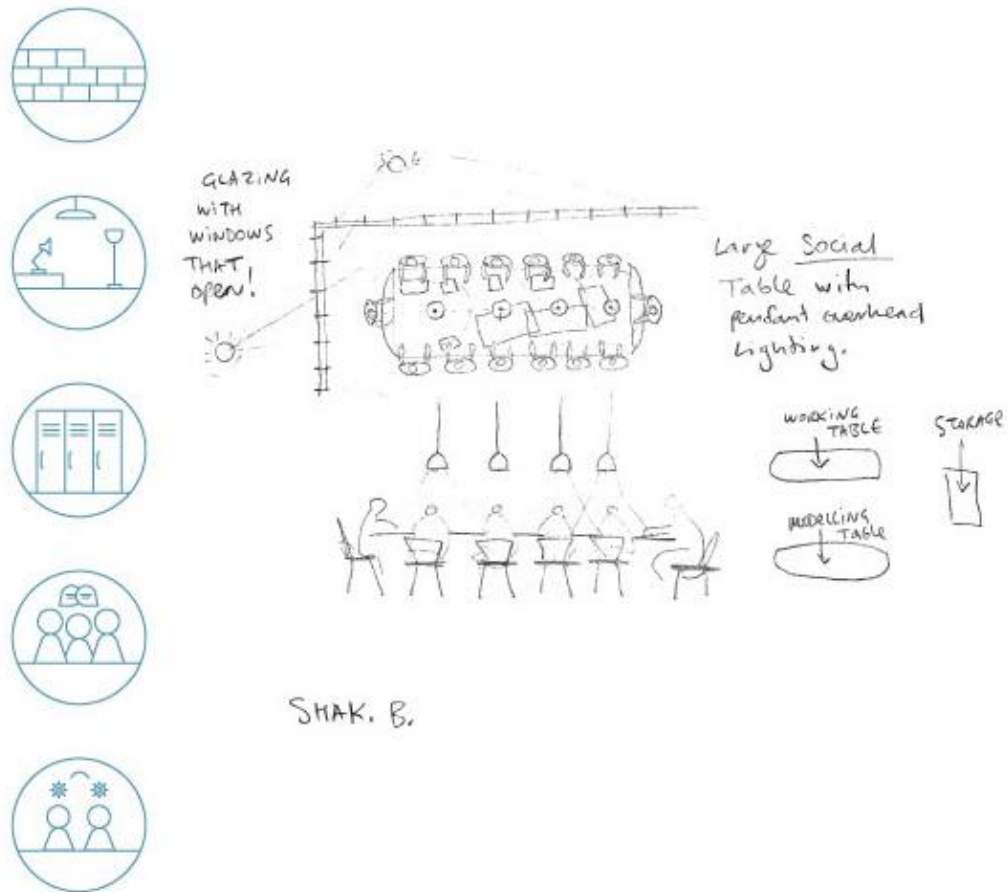
A5 - 54 The whole atmosphere of the design studio at Plymouth University. Source. Author



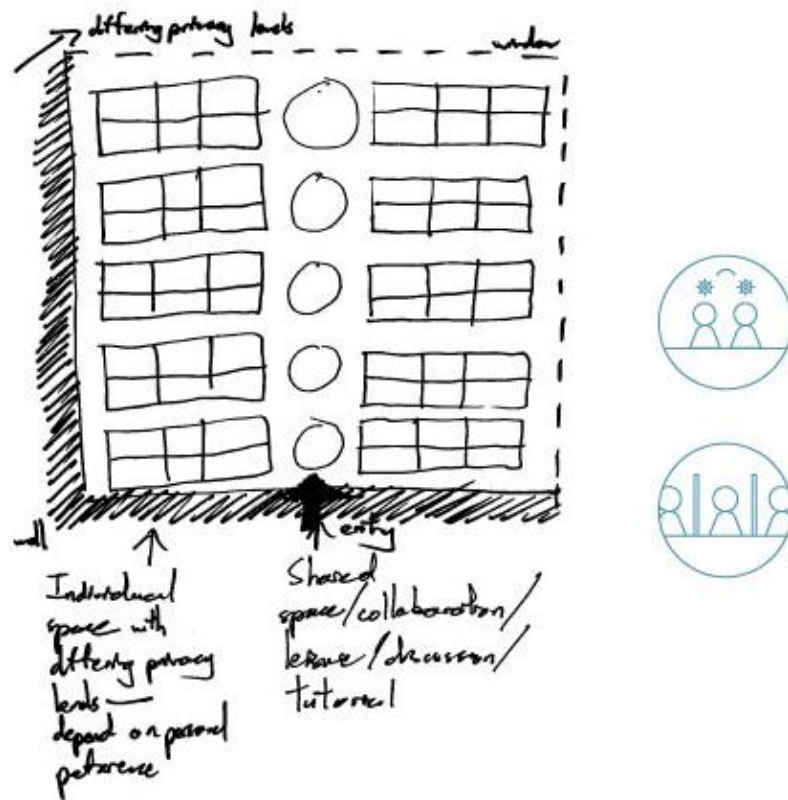
A5 - 55 working space at the design studio. Source: Author



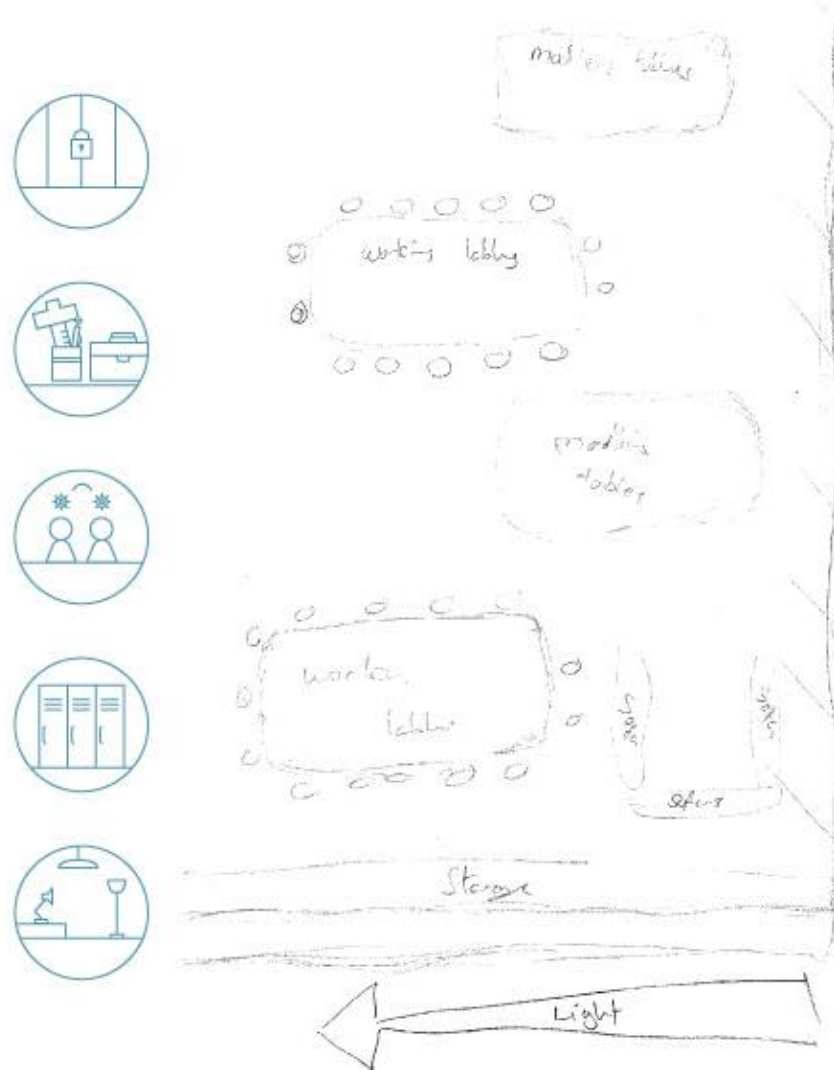
A5 - 56 Working spaces at the Plymouth University. Source: Author



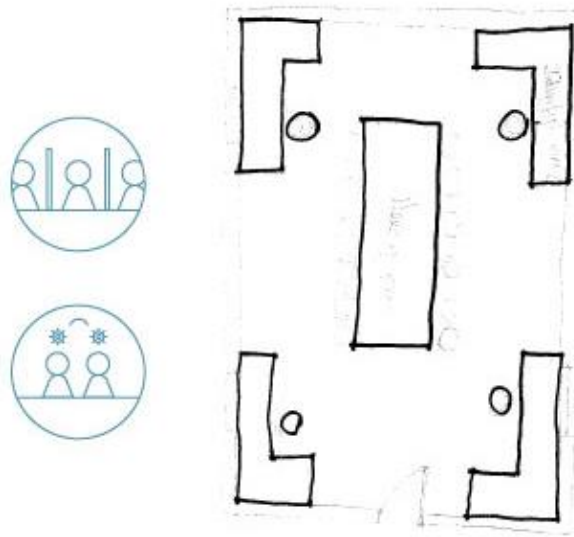
A5 - 57 The Plymouth University Student's drawing for the optimum design studio. Source: Author



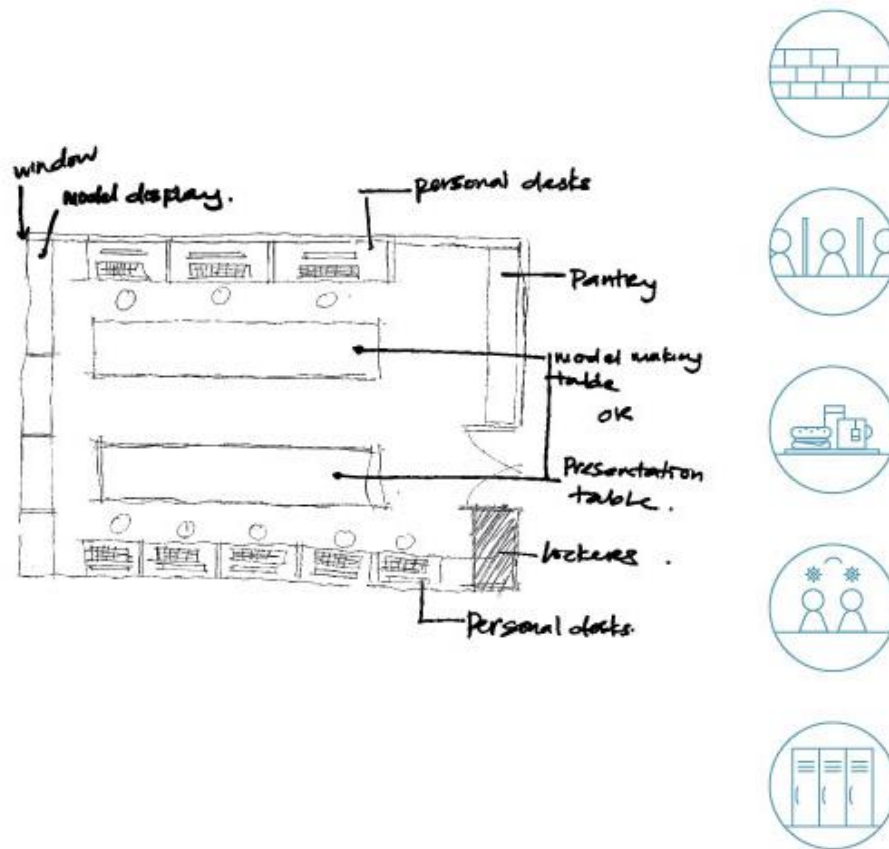
A5 - 58 The Plymouth University Student's drawing for the optimum design studio. Source: Author



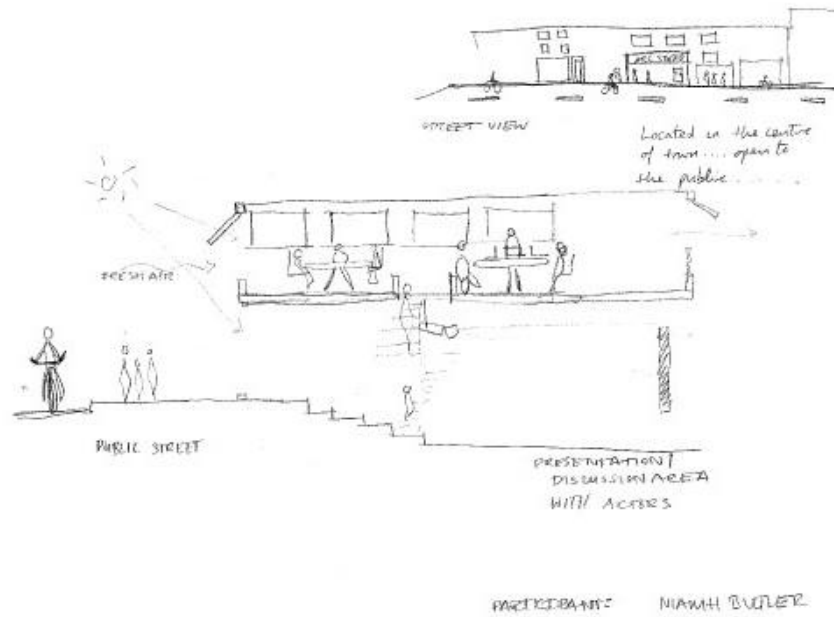
A5 - 59 The Plymouth University Student's drawing for the optimum design studio. Source: Author



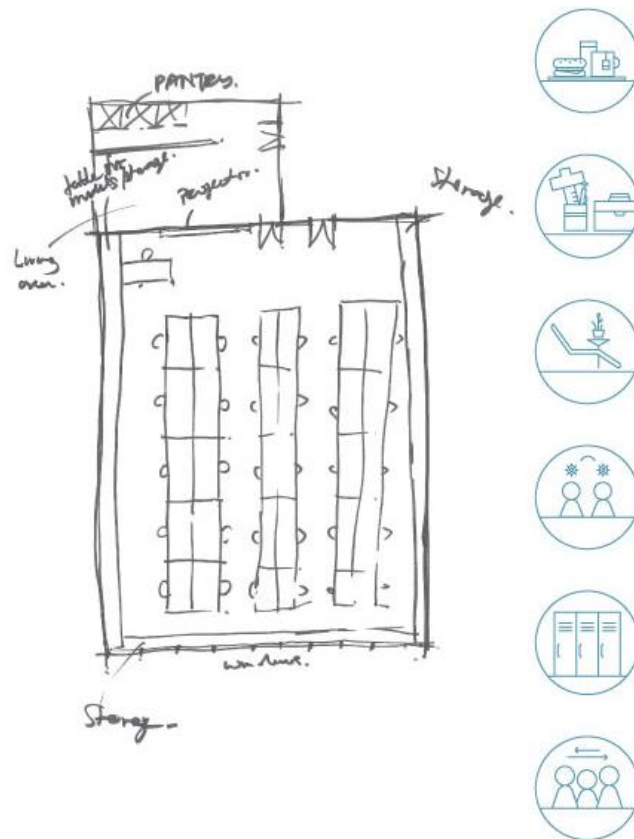
A5 - 60 The Plymouth University Student's drawing for the optimum design studio. Source: Author



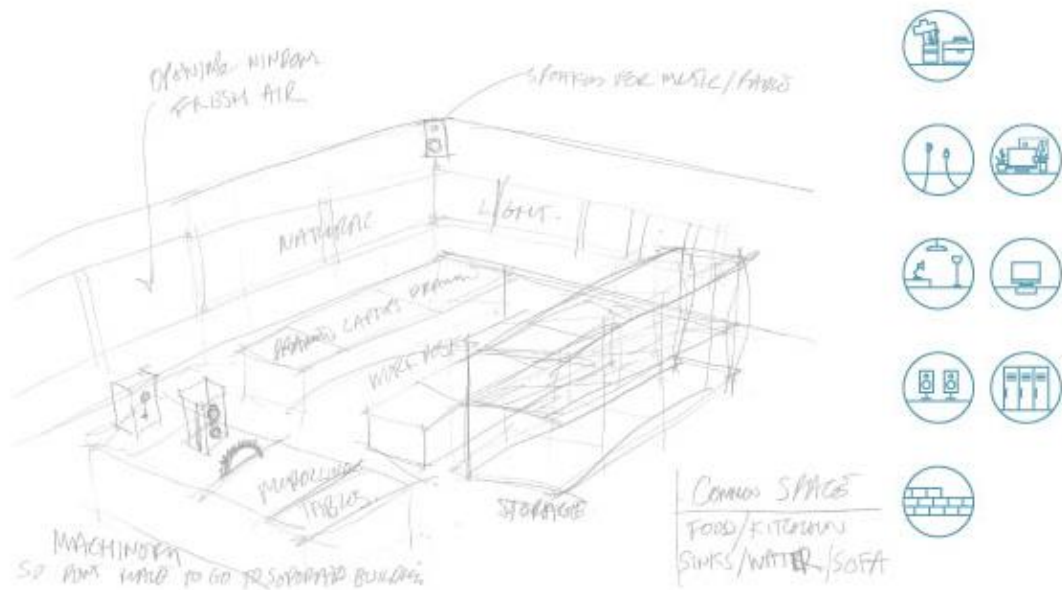
A5 - 61 The Plymouth University Student's drawing for the optimum design studio. Source: Author



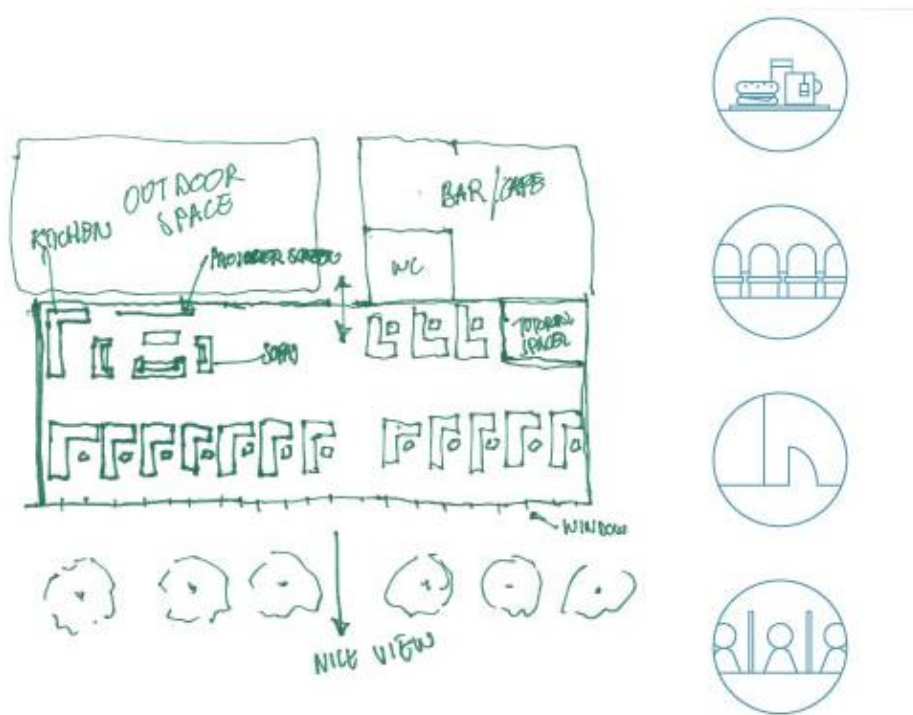
A5 - 62 The Plymouth University Student's drawing for the optimum design studio. Source: Author



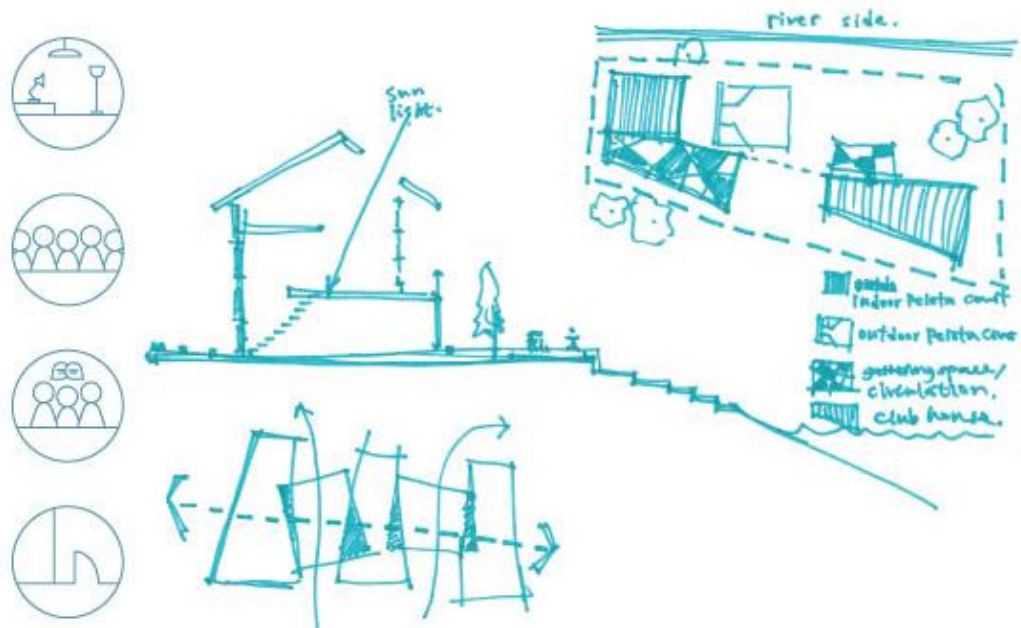
A5 - 63 The Plymouth University Student's drawing for the optimum design studio. Source: Author



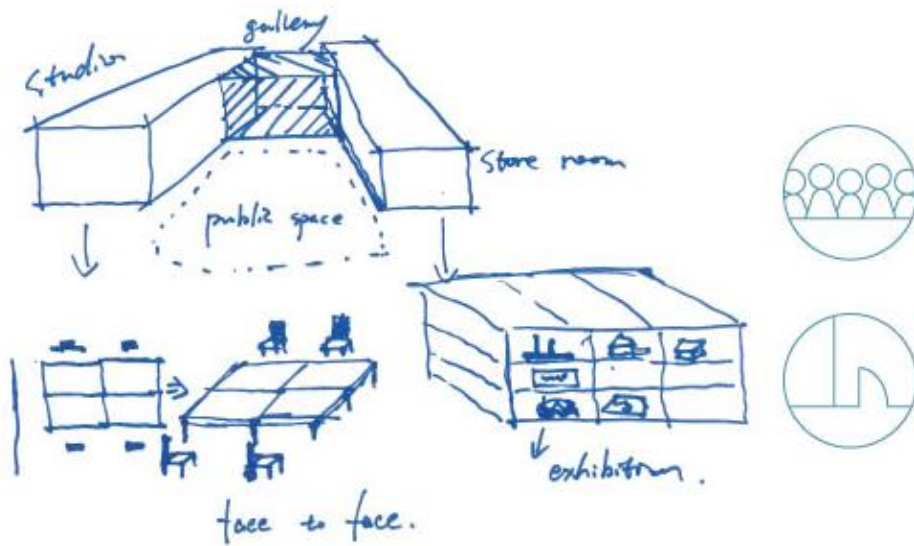
A5 - 64 The Plymouth University Student's drawing for the optimum design studio. Source: Author



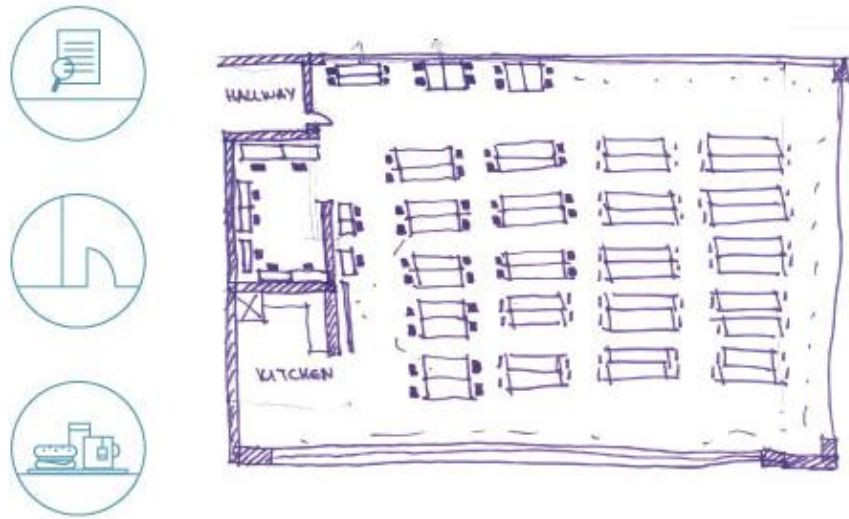
A5 - 65 The Plymouth University Student's drawing for the optimum design studio. Source: Author



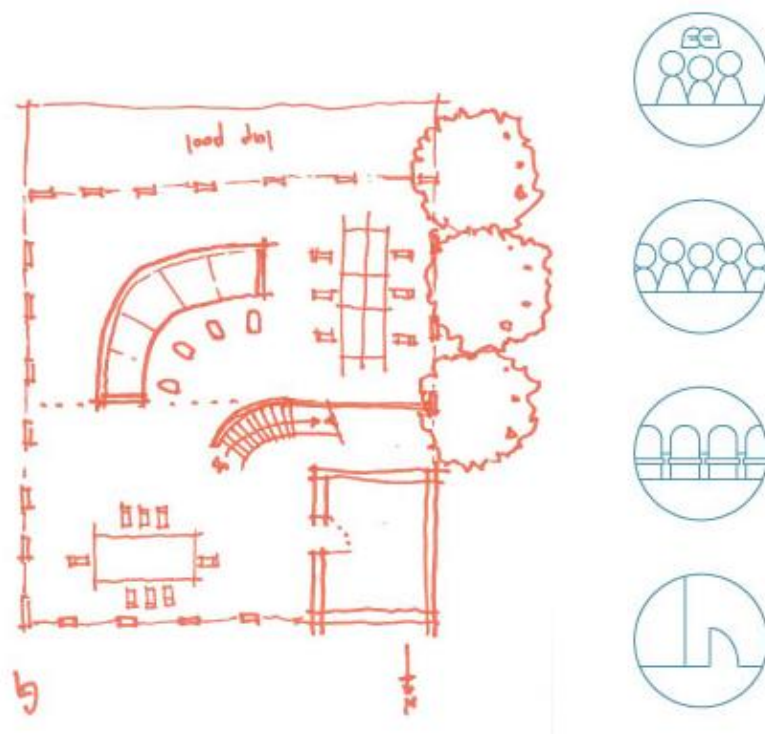
A5 - 66 The Plymouth University Student's drawing for the optimum design studio. Source: Author



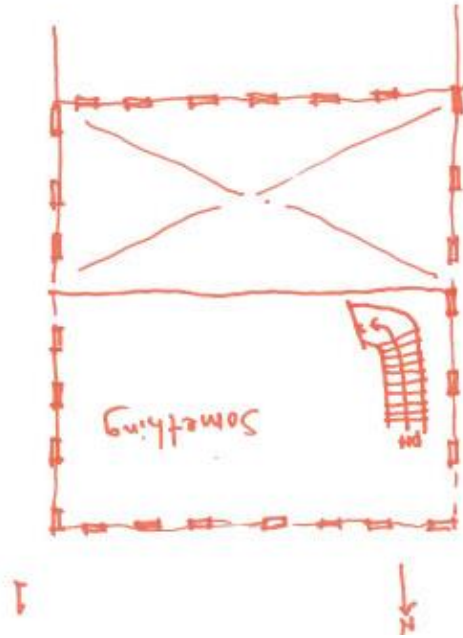
A5 - 67 The Plymouth University Student's drawing for the optimum design studio. Source: Author



A5 - 68 The Plymouth University Student's drawing for the optimum design studio. Source: Author



A5 - 69 The Plymouth University Student's drawing for the optimum design studio. Source: Author



A5 - 70 The Plymouth University Student's drawing for the optimum design studio. Source: Author

A5.4 The University of Sheffield



A5 - 71 The working spaces at the first year design studio. Source: Author



A5 - 72 Power outlets at the only wall in the design studio. Source: Author



A5 - 73 The corridor in the design studio. Source: Author



A5 - 74 The movement within the spaces through the design studios. Source: Author



A5 - 75 The atmosphere of the first year design studio. Source: Author



A5 - 76 Teaching station within the design studio. Source: Author



A5 - 77 The MAAD design studio at the University of Sheffield. Source: Author



A5 - 78 The MAAD design studio. Source: Author



A5 - 79 Lack of privacy in the MAAD Design studio. Source: Author



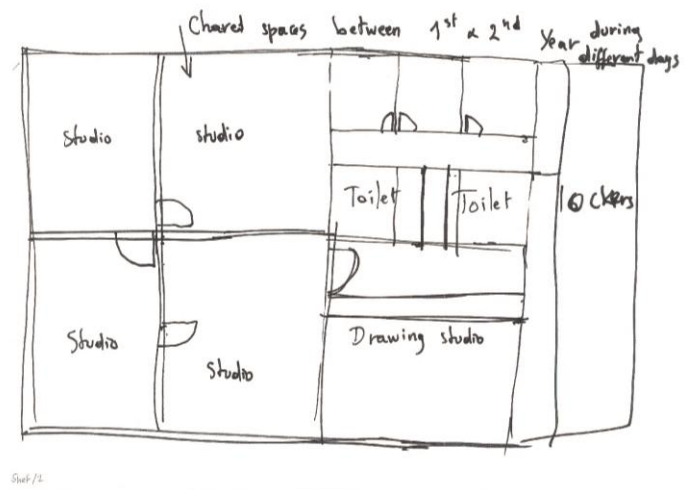
A5 - 80 Teaching station and use of technology in the design studio. Source: Author



A5 - 81 Working space at the design studio in the University of Sheffield. Source: Author



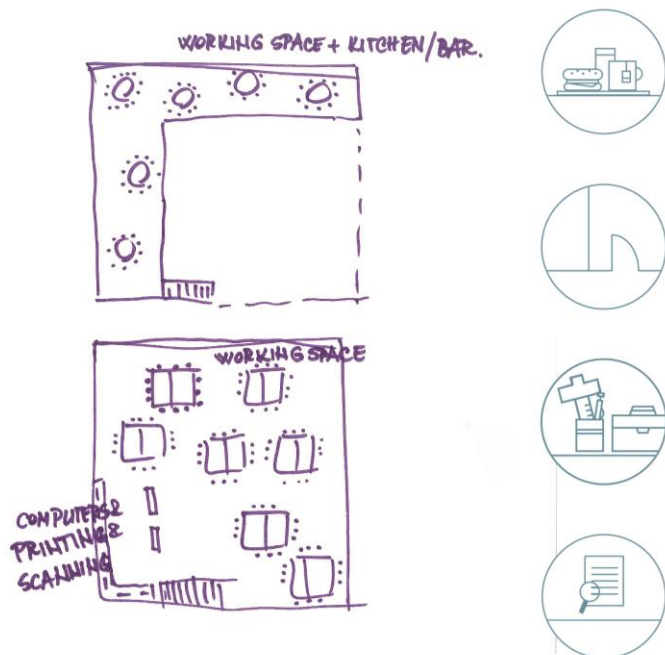
A5 - 82 The lack of storage space. Source: Author



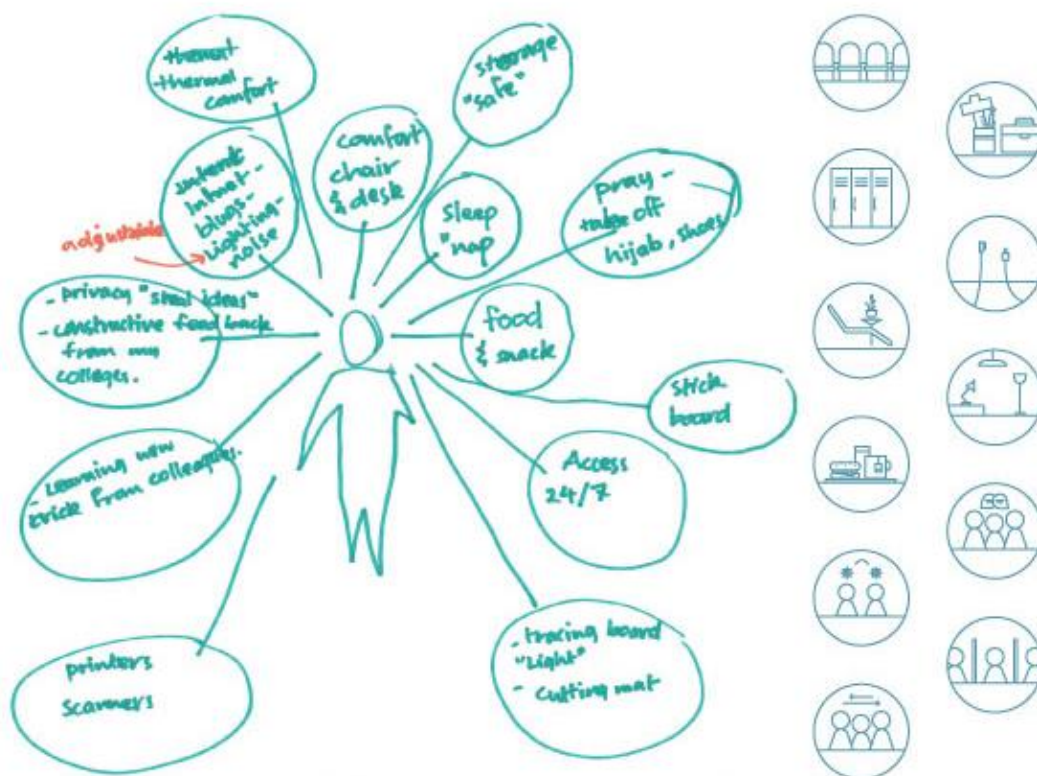
A5 - 83 The University of Sheffield Student's drawing for the optimum design studio. Source: Author



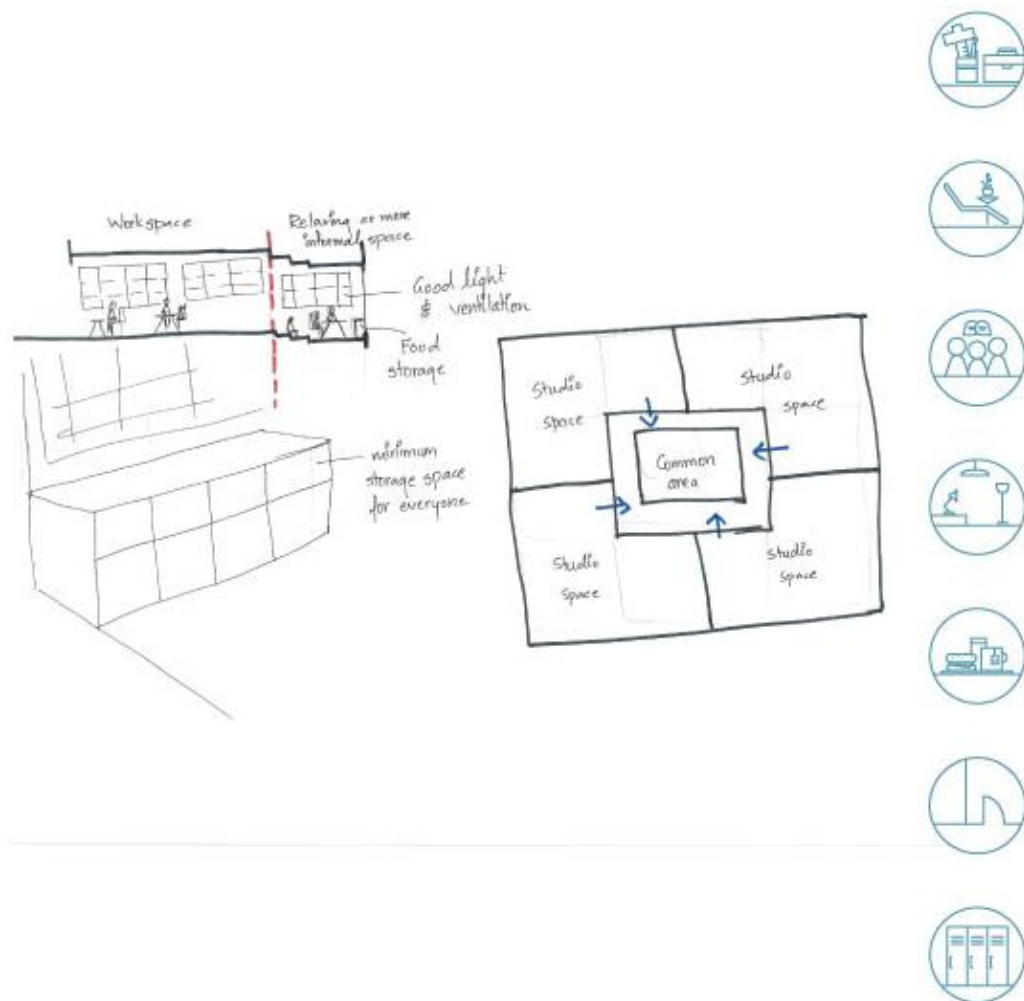
A5 - 84 The University of Sheffield Student's drawing for the optimum design studio. Source: Author



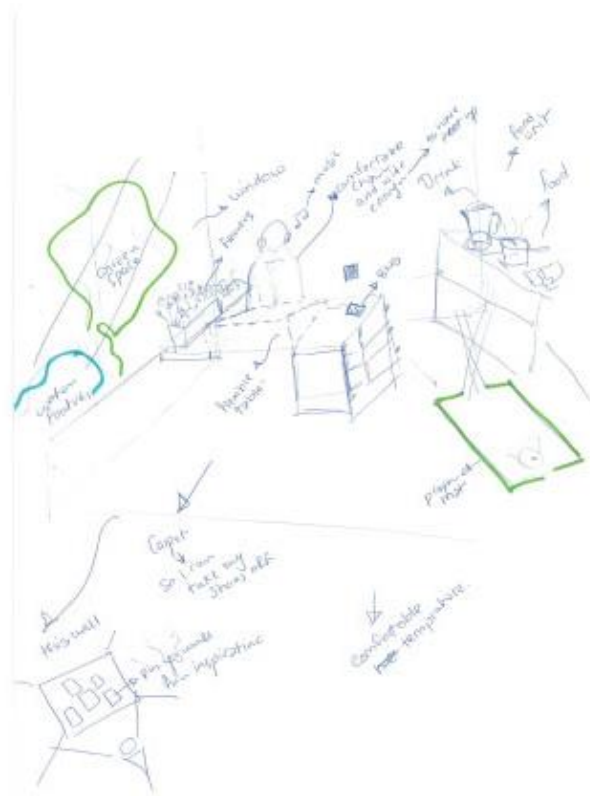
A5 - 85 The University of Sheffield Student's drawing for the optimum design studio. Source: Author



A5 - 86 The University of Sheffield Student's drawing for the optimum design studio. Source: Author



A5 - 87 The University of Sheffield Student's drawing for the optimum design studio. Source: Author



A5 - 88 The University of Sheffield Student's drawing for the optimum design studio. Source: Author

APPENDIX 6: SAMPLES OF TRANSCRIPTION OF INTERVIEW

A6.1 Transcribing Interview of Leo Care on the 5th of November, 2014

Reem: Would you like to describe what you are doing in the field of school design?

Leo: In regard the school design, I think I have done a range of things in the past, myself and other colleagues in the school of Architecture, ... and Howard Evans, we've worked on a different of number of projects during the building of school for future initiative, we under took a lot of work around good practice, good design from around the world, so this was for a large construction company ... we did a lot of work for them actually, sort of consultancy working looking at what sort of the main important contemporary themes in school design. And we have developed a sort of web resource and other facilities for initially for that organization but then it became an open source for people to come and understand and to think about design of schools and that was for anybody starting from school teachers through to architects and other people, so that was something that we spent a lot of time doing several years ago and we are still helpful that a book will be publish on that subject which I am hoping will be eminent but it may not be, we've been saying that for about few years now, we're still very interested in good school design and the power of well designed schools.

Reem: Is there any difference between the process of designing school and the process of designing any other building?

Leo: mmm, I think fundamentally the briefing processes can be the same, I think the reason that schools are particularly interesting is because the majority of the users of those buildings are young people, and whilst young people obviously use most of the building as well, in a school, I don't know what the population is, but it is probably 90% of the population of a school are young people and that is unusual in the sense of looking at any other building design I would say, and, therefore that is what interest me about them is that you have a group of people who are the main users who are different, are developing, are growing up to be people but they have, so they are in some senses are not considered as able to engage fully in the debate about what schools should be, or some people might say that is the case, but on the flip side of that you have an incredibly large group of people who are largely unhindered by the baggage that we as grown ups take with us in the everyday issues that we struggle with and therefore the level of creativity and (unhended creativity) is incredible. So I think in the sense of if you want to have an inclusive design process and if you want to actually participate with people through the design of schools which I believe in as an architect no matter what building you are working on then schools offer a unique opportunity to engage young people and I think it does a number of things then, so not only you're designing a school through working with young people you can actually make that school better for them because they are the main users of it, you can also then start to bring ideas to architecture design into the curriculum which is something that I also firmly believe in

and was called recently on the (...) review, and you can also raise their aspirations as to what the build environment in general should be like, and I think in that sense school are, or designing schools is kind of unique opportunity.

Reem: so you have answered my other question about how much of school designing process should the users input within the process through mentioning the young people and their inclusivity within the design process, but do you take pedagogy as an input as well, and as a factor in designing a school? And if so, what are the latest themes that you have been working with in designing the schools for future?

Leo: In relation to pedagogy specifically?

Reem: Yes.

Leo: I think pedagogy should play a big part in the design of a school, I think the issues that we have come across in different situations is that who is driving a pedagogy, so for instance in a lot of secondary schools in this country, you have the head teacher who is leading the design of the school and the pedagogy that went in there, and then over the process of designing building that usually takes several years, that head teacher might move on, go somewhere else and therefore somebody comes in and wants to put their mark on it and they change that pedagogy. Now that can be really difficult and problematic, so I think there are dangers within it, but if you got a school which has a particularly strong pedagogy in terms of you know, world of Stein school and like that, so then obviously a head teacher won't go drastically change that, and therefore there are a fundamental pedagogy there and of course the design should reflect (represent) that, and that's particularly interesting example because within the pedagogy there are particular rules that actually talk about buildings and architecture, so therefore there is an instant relationship and one that is enduring as well, whereas I think generally in design of school buildings the pedagogy although there is a national curriculum in this country, that is still open to interpretation and therefore individuals or a group of people will tend to mold that into sort of different ways. So I think pedagogy should have a big impact on the way that we design schools but you need to be careful that pedagogy needs to be something that is enduring and everybody buys into, because otherwise it can be problematic later on.

Reem: I will stop here about talking around school design and I will move to talk about architectural education and you as an architect, do you think that the architecture of a school of architecture building could create an architect?

Leo: Sorry, could you repeat that question?

Reem: Do you think that the school where you have studied architecture, like the classes, spaces, studios shaped you into becoming the Architect you are now?

Leo: Good question, well, I've studied here. So I have always been in this building, the fact that I am still here probably suggested that it has done its impact certainly on that kind of teaching that I approach teaching architecture that I think being in this building

has kind of impact on that. Having said that we did move out from another building number of years and we were in a building that has been different and I think they did have some impact on the way that we taught but I think there is still underlying ethos that is still there, I think that this building in fact has had a huge impact on me, I think the openness and in some sense that space, the ability to kind of always to look over the city and see lots and lots going on, I think has a big impact the way I think about architecture, but I think also one of the things that we have also been grasped on in this building is also the sense of isolation because it is so high above the ground. And I wonder whether the idea, it is always been a bitter of issue that the school of architecture which is kind of socially driven and talked about socially engaged is actually completely removed because it is so high up on the top of the tower. In a way I wonder whether this sort of isolation is driven that agenda in an extent in a questioning way, I think it has but I also think, this building is so much nicer now than when I started, but I think there was a certain sense of freedom that was offer by this building, because of the open spaces as studios, but when I started here the building was not in a very pristine state and I think there were more in sense that you could do more in developing or changing the space to set your needs. There is lots of flexibility you can paint things and the columns, you could kin of bring in furniture and you could do different things with it to actually make it your own, that was diffierent sort of approach really, so I think that had some influence sort of the way that I've brought up to be an architect.

Reem: So, with this new furniture, and these new white walls and whiteboards, in your opinion, won't give the students the same opportunity that you had?

Leo: maybe be to some extent, I think they wont have the opportunity to make their mark, but I think the time had changed, and because students now are having to pay such a large amount of money to study I think they expect different type of education and different type of working environment, and actually I do agree that there isn't something there in a way that was a bit messier and that would give more opportunity to kind of change their spaces, but I think the climate has changed around that, so it is a difficult one.

Reem: So you agree that the sense of ownership of space is important for students to be better and to produce more?

Leo: yes I think it is a good point, the sense of ownership issue is an important one and I think in school of architecture the amount of space the students have is being reduced to some extent partially because numbers of students are getting greater, and I think that numbers of school of architecture in this country have actually kind of done away with studios space and got rid away of this space which is essentially owned by the students, and that is something that we will fight to keep wherever possible and I think it is partly about that even if there are limitation of what can be done in that space I think I still there are strong sense of ownership here, and providing space that student can essentially inhabit is really an important partly of what goes here and that ethos is going here for a long time.

Reem: Regarding the space or the building of architectural school, should it always make a statement?

Leo: no, I don't think so, I think going back to what we have just said, a lot of people and I will tend to agree in school of architecture could be just in a big shed, and in a way that could just actually facilitate a huge amount of expression in creativity and flexibility that students and staff could actually make it their own. I think there have been some interesting examples of school of architecture are more like that, historic examples and also newer one, certainly I don't think it have to be a statement, I think having an amount of flexibility and the space is flexible or a range of different working and learning styles and method is important and then going back to the design of primary and secondary schools, I still think that the studio model and the studio way of learning is still a powerful one, and I think it is something that I personally believe would benefit primary and secondary school also to a large extent as well having that flexibility in the space to be able to change things around, and people have tried that and it doesn't always work because again everybody needs to buy into that, and whether the national curriculum allows that to happen is another matter.

A6.2 Transcribing Interview of Martin Beattie on the 21st of April, 2016

I will start with the spatial future of the year one design studio. How would you describe the design studio as a space?

It's fairly functional. We have 3 main spaces, one large, a medium and a smaller studio. They're full of tables and drawing boards and shelves for models to go on. They're quite well ??? but other than that they're just quite functional. There's nothing spatially interesting or exciting about them, they're just spaces for people to work in.

Are there any other spaces and facilities than studios for within the design project?

They use.... There's the digital lab, which I just mentioned, which is a room essential for the computers where we teach digital skills. There are other facilities like the library and we have a printing room as well that they use. There are those kind of ancillary things, but the studio is the main place for them.

How would you describe the proximity between these spaces and the design studio. Are they all in the same building or do they have to travel?

They have to travel, yes they have to use their legs. The main library is that way, maybe 3 or 4 meters. The digital studio is just in another building which is probably 100 meters away. And the print room is in the same building at the studios but it's up two floors.

They have to walk. Do you think they complain about the fact that it's scattered all over?

Not so much. Sometimes they complain about the library. They don't complain about it as such. The library has just had a new extension, a new building. We've taken over a new building for the library which is even further away, which I know some of them sue as well. I think they just accept that that's what they have to do. They go to lectures as well, that are scattered, reasonably close all over the campus. They just accept that's what they have to do.

How much time do the students spend in the studio? Is it available for them solely or do they share it with somebody else?

It's available 24/7, basically for stage one although because in semester one we teach stage 1 architecture. We teach them together with another course architecture and urban planning, and we share the teaching in semester one. Inevitably, although stage one architecture and urban planning has their own studio which is over in the that building over there, the students do interact with each other so they do and they do swap studios a

bit. 98% in there will be architecture students, there might be the odd AUP in there sharing, but it's basically in there.

I will talk about their experience now. What are the general activities that take place inside a studio? Obviously drawing, modelling, or does that happen somewhere else?

Yes, it's mostly drawing and modelling. We have a workshop which they use, they might use for making larger scale models but the sorts of models they're making now might just be card so they do just make them in the studios. They might cut up a baseboard in the workshop but basically their making models in the studios. And yes they're doing drawings because it's full of drawing boards. What was the question again?

What are the general activities that take place?

There's drawing and modelling, quite a bit of socializing as well. We do teaching in there as well. Unfortunately, we don't have enough separate teaching spaces to have tutorials, we have them in different spaces. We have them on Thursdays and Fridays and we almost always use the studios for some of those tutorial sessions on Thursdays and Fridays.

How would you describe the relationship between the student and studio space? Do they value it as a spatial space for them? Does it contribute to the overall designer architects-to-be?

Yes, I think they do value it. Inevitably some use it and value it more than others. But the ones that do – we've just finished a project last week and the studios were packed, literally chock a block with people using it. They do use it???

Does the space contribute to their overall experience?

You mean the actual physical space?

Yes.

It's not a particularly great architectural space, it's a nice space but it's not like a great architectural space to stimulate them in that way but nevertheless we see it as very important that we provide studio spaces for students. They learn so much, probably more from each other than they do from us. It's very important to foster that in a way. It's important in that sense, but it's maybe not the best precedent as a space to use.

Collaborative learning and pedagogy. How would you describe the design studio pedagogy for the first year? What basically do you do? How do you select the projects?

Do you mean how do we design the course?

Yes. In essence I can probably describe the structure of the first year. I guess, in essence broadly speaking, the design course which is 60 credits, or basically half the weight of the year if the focus of what they do. They have lecture based course which feed into that design core. We have... semester one is largely a series of skill building projects at the beginning of semester one. The first project is about drawing, essentially teaching them how to draw planned sections and elevations, well what they are and how to draw them. And to survey buildings as well as other forms of representations. They do life drawing, they do photography, a different range of representing things. We then have ostensibly a modeling project where they, it is a design project, but it's a very tight limited design project and we're teaching them essentially the process of designing using working models and then leading up to a final model, all they way up to 20. And no drawings. So the first project is all about drawings, the second project is about models, and the third projects in semester one is a short design project where they're designing – this year it was a reading room, so it's a very small scale a library, essentially it's a one room space on a site in Newcastle. So it's a very small scale building but they're using some of those early skills in drawing and modeling to design a pretty small simple building.

So in the second semester we have the major project which is designing a 3 bedroom house with a studio for an artist. That's obviously a lot more complicated because there are quite a lot more spaces. But again essentially they're using the same skills of drawing and modeling and it's teaching them the same process of developing the design through the use of models. That's just finished. They're now embarking on another skill building thing, which is really looking digital representation. The first project they looked at was in terms of drawing was all manual. So the second one is all digital. So it's looking at Photoshop, a bit of time on In-Design and a bit of time learning ????. And that's it essentially. So, the first year is a mix of skill building. They obviously come in with a whole range of skills, some with absolutely none, some with huge amounts and some in between and we're trying to level the playing field. And at the same time teaching them some design. So that's the sort of broad pedagogy of the design course. Other non-design courses, some will feed into it. So we have technology courses that link into different design projects in semester one and semester two. We have a history course which doesn't really link at the moment. History and theory which don't really link to the design course, we're starting to think of ways in which we can do that, but that's down the line a bit.

In that structure that you've just described to me, does it encourage collaborative learning? Is there anything in there that you design specifically for collaborative learning?

Yes, right at the beginning of the year we have these ?????, what we call a one week ??? that runs across all the years of the programme from year 1 – 6 and we run maybe 12 different projects across the whole school and each of the projects has students from all years in. We also involved Masters students now. When first years come in it can be a bit of a daunting thing for them but they get to meet students from all over the school. More than anything it's a kind of social event, so for first years it's an introduction to the school and the life of the school for them as much as anything. And in terms of

collaborative learning..... there's the week by week tutorial things that we do; obviously teaching in groups so that they're seeing other students' work all the time, constantly mixing the groups around so that they're seeing different students every week. They do a group project just before they start the housing project, there's a housing precedent project they do in groups, they're mixed ability groups, we make them mixed ability groups just within the first year, so they get to work together there. So I guess were trying to foster that process of them learning from each other as much as we can really. In lots of different ways.

Have you noticed in general, not just in this year group, any other types of collaboration? I mean incidental, unplanned, that happens between the students in the design studio?

It's difficult because I don't generally wander through there.... No.

I'm sure that probably happens in the studio, but I just don't see it so much. You've just reminded me that we have, as well as tutors, we do actually employ students from further up the school to come and teach in first year as well. We have roaming tutorials that happen in the week often on a Tuesday afternoon. Often students, often from stage 5, will come in and because they're much closer in age than us they will..... sometimes their guard is a bit down when the students are there. They can get more out of them. They're much more relaxed with them in terms of what criticism they will take or what they will accept. I'm sure what you've just described happens in the studio, with people going around and teaching each other.

If you were to design a studio space, how would you sketch it?

I think the thing with our studios is that there are so many students, that's why the way they are the way they are in many ways, to get as many tables in as possible.

How many students?

There are 140 in first year. So, I guess, if I was designing a studio I'd have fewer tables in. I've said we go in and teach in there as well, there a no teaching spaces, we just sit around the tables.

APPENDIX 7: PUBLICATION, ATTENDANCE AND PARTICIPATION

Attendance	2nd International Conference of the Association of Architectural Education 03-05/09/2014
	Learning and Teaching Conference - University of Sheffield 2015 06/01/2015
Participation	Teaching and Learning Conference - Liverpool John Moores University 17-18/06/2015 (Presentation: Design studio space: ownership and belonging for better learning experience)
	Learning and Teaching Conference - University of Sheffield 2017 10/01/2017 (Poster)
	Impact by Designing - ARENA THIRD ANNUAL CONFERENCE 06-07/04/2017 (Presentation and Publication – in press: Understanding a space, Understanding a Culture. Designing a Space, Designing a Culture: Case of University of Northumbria)
	3rd PhD by Design Conference 03-04/04/2017 (Presentation)
	Twelfth International Conference on Design Principles & Practices 05-07/03/2018 (Video – Lightening Talk and accepted for publication: Design studio: Users' Experience)